The analysis of funerary and ritual practices in Wales between 3600-1200 BC based on osteological and contextual data

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Abstract

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Keywords: Burial practices, ritual practices, Neolithic, Bronze Age, Wales, osteology, cremations, inhumations

This thesis examines the character of Middle Neolithic to Middle Bronze Age (3600-1200 BC) funerary and ritual practices in Wales. This was based on the analysis of chronological (radiocarbon determinations and artefactual evidence), contextual (monument types, burial types, deposit types) and osteological (demographic and pyre technology) data from a comprehensive dataset of excavated human bone deposits from funerary and ritual monuments.

Funerary rites in the Middle Neolithic (*c.* 3600-2900 BC) sometimes involved the deposition of single inhumation or cremation burials in inconspicuous pit graves. After a hiatus in the Late Neolithic (*c.* 2900-2400 BC), formal burials re-appeared in the Chalcolithic (*c.* 2500-2200 BC) with Beaker burials. However, formal burials remained relatively rare until the Early Bronze Age (*c.* 2200-1700 BC) when burial mounds, which often contained multiple burials, became the dominant type of funerary monument. Burial rites for this period most commonly involved the cremation of the dead. Whilst adult males were over-represented in inhumations, no age- or gender-based differences were identified in cremation burials. Patterns in grave good associations suggest that perceived age- and-gender-based identities were sometimes expressed through the selection of objects to be placed in the graves. The tradition of cremation burials carried on into the Middle Bonze Age (*c.* 1700-1200 BC), although formal burials became less common. Circular enclosures (henges, timber circles, stone circles, pit circles), several of which were associated with cremated human bone deposits, represented the most persistent tradition of ritual monuments, with new structures built from the end of the fourth millennium BC to the middle of the second millennium BC in Wales.

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Chapter 1: Introduction

The purpose of this study was to examine the nature of Middle Neolithic to Middle Bronze Age (3600-1200 BC) funerary and ritual practices in Wales. Past studies on this topic have focussed on a number of key themes. Research has been carried out to record and classify monuments into specific monument types, most recently through the Cadw-funded *Prehistoric Funerary and Ritual Monument Survey*. At least 529 of these monuments have been excavated in Wales, from small-scale and often poorly recorded excavations by antiquarians, to more extensive research projects carried out by members of the Royal Commission, keepers at the National Museum of Wales, universities, and archaeological units and Trusts. Archaeological data gathered from these excavations – from the types of mortuary deposits, to the artefactual evidence and, more recently, radiocarbon dates – have previously been examined to define the character of Neolithic and Bronze Age communities (e.g. Fox 1959, Grimes 1951, Lynch 2000). This includes discussions centred upon the reconstruction of the individual identities of the deceased, the social organization or structure of these past communities as well as past belief systems, especially in terms of how the dead were treated and perceived. One major issue with these interpretations is that they are largely based on unreliable or inaccurate osteological data. The majority of bone reports from excavated funerary and ritual monuments in Wales were made before the development of more accurate osteological methods, especially for the analysis of cremation deposits. Furthermore, several of the funerary deposits excavated in the antiquarian period, although deposited in local museums and in the National Museum of Wales, have never been examined osteologically.

1.1 Research aim

The aim of this study was to define the changing character of funerary and ritual practices in Wales between 3600-1200 BC. This was based on a re-assessment of archaeological data – in terms of monument type, chronological data and contextual data – combined with the analysis of osteological data from human bone deposits. This research focused on the analysis of funerary and ritual practices from all recorded Middle Neolithic to Middle Bronze Age monuments in Wales. However, caves and rockshelters were not included as deposits from such sites often lack good stratigraphical and chronological data. Part of this study also involved the osteological examination of human bone deposits from excavated Welsh funerary and ritual monuments held within museum collections, County Record Offices, universities and archaeological Trusts. This analysis aimed to provide more accurate data on the nature of funerary and ritual deposits, especially in terms of demographic data (minimum number of individuals represented in each deposit as well as their age and sex). The interpretation of this data within a developed chronological framework aimed to examine some of the key themes associated with funerary and ritual practices in Wales between 3600-1200 BC, such as questions on identity, social structures, and the nature of belief systems associated with the treatment and disposal of the dead within these prehistoric communities.

1.2 Research questions

- What are the key characteristics – in terms of monument types, deposit types, demographics and grave good associations – of funerary and ritual practices in Wales between 3600-1200 BC?
- Are there any patterns between demographic data and grave good associations?
- What could patterns in grave good associations tell us about the nature of Neolithic and Bronze Age societies?
- When do major changes in funerary and ritual practices occur between 3600-1200 BC?
- What is the significance of changes in funerary and ritual practices across time?

1.3 Methodological approaches and thesis structure

In order to examine the nature of Middle Neolithic to Middle Bronze Age (MN-MBA hereafter) funerary and ritual practices in Wales, this study focused on five research areas:

1) Literature review of theoretical approaches to funerary archaeology, especially in relation to the analysis of British Neolithic and Bronze Age mortuary rites (Chapter 2).

2) Development of a chronological sequence for the construction and use of MN-MBA funerary and ritual monuments (Chapter 3). The primary source of data for this chapter came from the *Wales and Borders radiocarbon database* (Burrow and Williams 2008), which was supplemented with radiocarbon dates from more recent excavations (2010 to 2014) from published excavation reports. The five chronological periods used throughout this thesis are as follows: Middle Neolithic (*c.* 3600-2900 BC), Late Neolithic (*c.* 2900-2400 BC), Chalcolithic (*c.* 2500-2200 BC), Early Bronze Age (*c.* 2200-1700 BC) and Middle Bronze Age (*c.* 1700-1200 BC).

3) Osteological analysis of all MN-MBA human bone deposits identified in museums, Record Offices and universities. The term 'human bone deposit' is used throughout this study to define a discrete assemblage of human bones from a single context deposited in one event. The material and methods for the osteological analysis are described in Chapter 4. The aim of this analysis was to provide more accurate data in terms of the minimum number of individuals (MNI) represented in each burial deposit as well as their age and sex.

4) Analysis of the nature of MN-MBA funerary and ritual practices in Wales (Chapter 5). The sample used for the analysis included all excavated monuments with published and detailed excavation accounts identified from the Historic Environment Record (HER) data retrieved from the four Welsh Archaeological Trusts (WATs). The first step in the analysis was the creation of a database which contained contextual and demographic data (example of Access database in Appendix E). This data was then used to perform a detailed analysis to examine the context (in terms of types of monuments, types, sizes and orientations of burial features, and types of deposits), demographic data (MNI, age and sex) and types of associated grave goods for human bone deposits from each chronological period. The final part of this chapter examined changes in funerary and ritual practices across time. Chapter 6 focused on the

analysis of pyre technology and cremation ritual practices based on data gathered during the osteological analysis.

5) Interpretation and discussion of the results from Chapters 5 and 6 to define the nature of MN-MBA funerary and ritual practices in Wales, especially in terms of the research questions, and a wider comparison to the practices recorded elsewhere in Britain for each chronological period (Chapter 7).

1.4 Map of the study area

The location of archaeological sites referred throughout this thesis is based on the current administrative regions of Wales (Figure 1.1). However, the current twelve administrative regions in south-east Wales have been combined into two regions based on the old historic counties, Glamorgan and Monmouthshire.

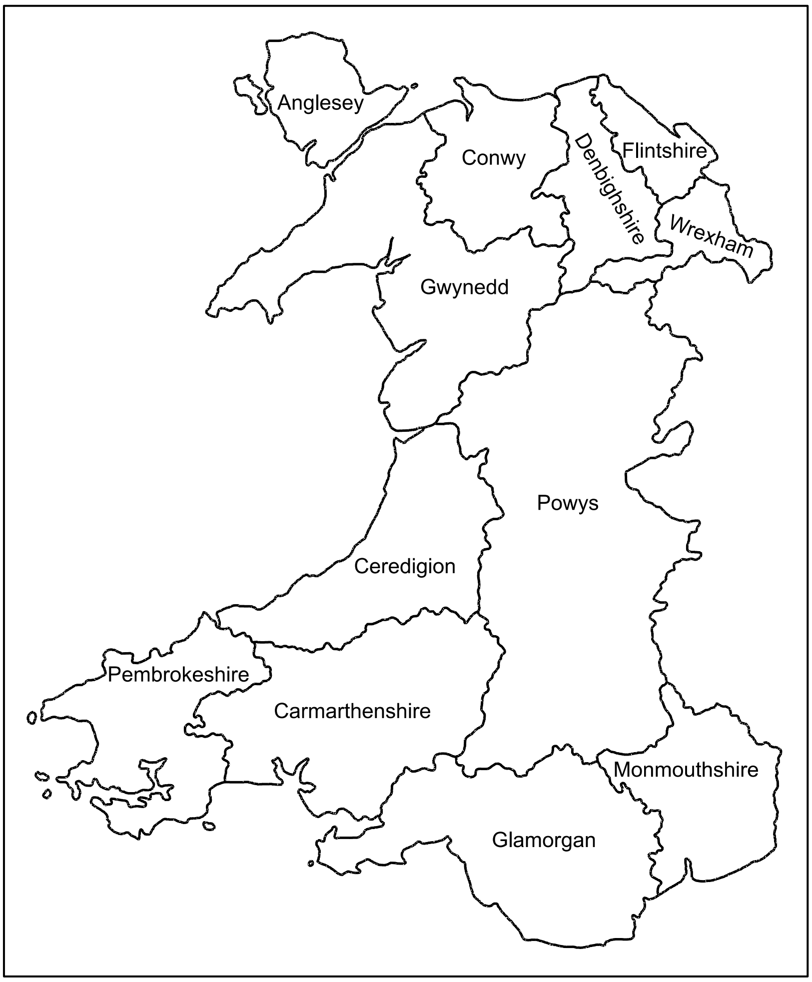

Figure 1.1: Map of Wales with the administrative regions used in this study.

1.5 Note on the calibration of radiocarbon dates

All radiocarbon dates cited in the text are given as calibrated BC dates (cal BC), expressed at the two sigma (95.4%) confidence level as recommended by Mook (1986). Radiocarbon determinations were calibrated with the IntCal 13 calibration curve (Reimer *et al* 2013) using the OxCal v4.2.4 program (Bronk Ramsey 2014). For sites with sufficient radiocarbon determinations and stratigraphical data, Bayesian models were created using the OxCal v4.2.4 program (Bronk Ramsey 2009). Radiocarbon dates in Bayesian models are referred to as 'modelled dates (BC)'.

Chapter 2: Theoretical approaches to funerary archaeology

This chapter brings together a discussion on the key themes associated with the study of mortuary and ritual practices within funerary archaeology, especially in relation to the British Neolithic and Bronze Age. Theoretical approaches which are particularly relevant to this study centre upon the examination of the processes surrounding the active nature of the creation of funerary rites (section 2.1), including issues associated with the temporality and reproduction of funerary rites (section 2.1.1) and manipulation and circulation of human remains (section 2.1.2). Section 2.2 explores the ways in which the mortuary record can be examined to reconstruct past identities through discussions on biological identity (2.2.1), body treatments (2.2.2) and grave goods (2.2.3). Another theme relevant to this study revolves around the interpretation of ritual monuments within prehistoric studies (section 2.3). The final section (2.4) provides a summary of the key theoretical themes as well as highlights issues associated with the interpretation of Middle Neolithic to Middle Bronze Age funerary and ritual practices in Wales.

2.1 Death as a process: on the active nature of the creation and manipulation of funerary rites

Death as the end of sentient being is a human inevitability, but how the point of death is recognised is culturally variable. Historically, attempts to define the exact moment of a human's death have been problematic, and even within modern medicine the definition of the point of death is still subject to ongoing debates (Bondeson 2001, Hossain and Gilbert 2010, Miller 2009). In many cultures, death is more of a process than a single event. It implies a slow shift from one state to another (Metcalf and Huntington 1991: 29). The funerary process cannot therefore be thought of as a single event, but rather as a process that may start before the death of the individual and may extent long after death.

The reconstruction of mortuary rites represents an important topic of research for archaeologists (Metcalf and Huntington 1991: 14). The ways in which the dead are treated can be manifold: corpses may be quickly placed within a grave after death, or left to rot in man-made structures or in natural places such as rockshelters, whilst others are dismembered; some corpses may be burned, smoked, mummified or embalmed prior to burial; some of the bones may be shaped into tools, kept as amulets, or exchanged between communities (Metcalf and Huntington 1991: 24, Weiss-Krejci 2011: 69). Funerary rites may be elaborate and drawn out over a long period of time. However, as archaeologists we cannot dig up funerals, only the deposits resulting from these practices. These fragments need to be treated with caution as they cannot be read as direct evidence of funerary processes and may hide the regional and chronological complexity and variability of the rites practiced throughout the British Neolithic and Bronze Age.

For archaeologists, the ultimate aim in the reconstruction of mortuary rites is to uncover the sets of beliefs which underlie the treatment of the dead in past communities. The dead do not bury themselves, but are treated and disposed of by the living (Parker Pearson 1982, Ucko 1969). Burial may be a deeply significant act imbued with meaning and as such the mortuary process reflects the actions and traditions embedded within a particular society. Ucko (1969) notes the variety of attitudes to burials and mortuary rituals across the world, ranging from the practical disposal of the corpse to mortuary rituals where every object and action is ingrained with significance. The problem for archaeologists studying burials is to identify where on this spectrum of variability the archaeological evidence lies. In order to interpret this record we must consider formation processes both in respect to the preservation of the archaeological record and to what degree this record may allow us to identify different stages in the treatment of a single body (Brown 1981). We need to consider mortuary rites as a process, not an event, and to trace the separate stages in the rites of passage if we are to avoid the trap of supposing that each deceased individual entered the archaeological record only once (Bradley 1995: vi).

2.1.1 Memory and practice in British Neolithic and Bronze Age mortuary rites

For many decades British archaeologists believed that a linear sequence in funerary rites could be defined, from communal burials in chambered tombs in the Early Neolithic, to single inhumations at the start of the Early Bronze Age, and multiple cremation burials later in the Early Bronze Age (Burgess 2001, Grimes 1951, Savory 1980). Major changes in funerary rites were explained in terms of invasions by dominant races, population movement, or through the diffusion of ideas between communities (Dawkins 1902, Fox 1959, Kendrick and Hawkes 1932). However, a more detailed analysis of the burial record, combined with major developments in absolute dating methods, led to the discovery that these sequences were over-simplified. Examples of single inhumation burials, sometimes covered by a round mound, were found to date to the Middle Neolithic period (Darvill 2010: 147). The tradition of cremation burials, once seen as a major change in funerary rites in the Bronze Age period, has been shown to represent a long-lived practice which started as early as the fourth millennium BC (Gibson 2016, Kytmannow 2008). A closer examination of the nature of the Bronze Age tradition of ‘single’ inhumations revealed much variety in the ways the dead were treated: some graves contained multiple individuals, others contained both inhumation and cremation burials, some individuals were found to be missing skeletal elements, or bones were placed in a non-anatomical order in the grave, whilst some individuals had been mummified before burial (Appleby 2013, Booth *et al* 2015, Gibson 2007, 2016, Petersen 1972). This therefore suggests that the burial record was much more complex and diverse than previously envisioned.

The development of single grave burials in the Middle Neolithic represents a clear break with the tradition of commingled inhumations in Early Neolithic chambered tombs. This reflects an important shift in the temporality of mortuary rites, from Early Neolithic tombs where the dead could be re-visited and the bones manipulated, to pit graves which were closed and inaccessible. Traditionally this change has been interpreted as to reflect a rise in the importance of individuality within prehistoric societies, as rites shifted from the commemoration of a large community of ancestors to specific individuals (Bradley 2007: 158). The fact that very few examples of Middle Neolithic pit graves have been uncovered (Darvill 2010: 147) could suggest that only important individuals were treated in this way. It is also a possibility that these often deep graves were used as a means to contain individuals (Gibson 2016).

Traditionally the appearance of Beaker burial practices at the start of the Early Bronze Age period was thought to reflect the movement of cultural groups from the Continent (Fox 1959: 10, Grimes 1951: 48-49). However, it has also been pointed out that a tradition of single inhumation burials already existed within the repertoire of mortuary rites of local communities (Burgess and Shennan 1976, Gibson 2007). These 'native' practices were adapted to include the deposition of a Beaker alongside a restricted number of objects (Gibson 2007). More recently, however, it has been argued that the tradition of single burials actually dates back to the Middle Neolithic rather than the Late Neolithic (Gibson forthcoming). Striking similarities were identified in the treatment of the bodies, burial contexts and associated graves goods between Middle Neolithic pit graves and Early Bronze Age Beaker burials (Gibson forthcoming). This could reflect a deliberate attempt by Early Bronze Age communities to reference past practices, perhaps as a way to reinforce their ancestral links in particular landscapes. However, as a millennium separates the two burial traditions, it is difficult to argue that the specifics of these practices were remembered (Sheridan 2008). Once more the hypothesis that Beaker burial traditions were initially imported from the Continent seems to fit the burial evidence better. However, stable isotope analyses from the *Beaker People Project* suggest that, although individuals were quite mobile within Britain, migration from the Continent was limited (Parker Pearson *et al* 2016). The question of how Beaker burial traditions were developed within the Welsh context will be examined as part of this study.

Bronze Age burial mounds most often contain multiple inhumation and/or cremation burials (Burgess 2001: 308, Petersen 1972). For antiquarians, these were seen as to represent monuments built in a single event to cover the remains of individuals who died under traumatic circumstances such as shipwrecks or on battlefields (Fenton 1860, Stanley 1876, Jones and Vaughan 1904). Improvements in excavation methods and dating techniques have since then shown that Bronze Age mounds were built in a sequential manner (Owoc 2001, Garwood 2007). This would therefore suggest a completely different set of relationships with the dead. The modification and re-use of monuments for the deposition of multiple burials represents an act of remembrance in which the relationships of the living were maintained and reproduced after death (Last 1998). As such, burial monuments may represent powerful mnemonic structures within specific time/space locales (Bradley and Fraser 2010). These monuments may also have been used to "create instantly visible history" in newly occupied areas by a family or a community (Garwood 2007: 46).

In some cases, individual grave pits were re-opened for the deposition of further burials (Gibson 2007, Petersen 1972). The re-opening of graves suggests that the location and content of a particular grave was remembered; the addition of further bodies acted as a way to add specific memories to the original burials (Mizoguchi 1993). The identification of repeated sets of patterns within the burial record – such as, for example, the primary deposition of an adult male followed by a female or a non-adult – suggests that memory played an important role in the reproduction of mortuary rites (Mizoguchi 1993, Petersen 1972). However, the archaeological evidence now suggests that these sequences involved more complex processes than the simple re-opening of graves to deposit further burials; it may also include multiple processes of active manipulation of human remains over an extended period of time (section 2.1.2).

Around the middle of the second millennium BC, funerary customs associated with the construction of round barrows become less common (Garwood 2007). This period is also associated with a shift in burial types, as cremation burials – some of which were placed in cremation cemeteries – came to dominate the mortuary record in the Middle Bronze Age period (Bradley 2007: 197). Major changes in subsistence strategies within Middle Bronze Age communities – as suggested by the increase in the number and extent of field systems and more substantial dwellings – probably had a significant impact on the relationships people maintained with the landscape (Appleby 2013: 93, Brück 2000). Funerary rites no longer involved the construction of conspicuous memorials, some of which were clustered in cemetery areas perhaps as a way to emphasise the continued significance of ties and links to the ancestors (Bradley 2007: 201, Brück 2004: 310). These shifts in mortuary rites suggest a complete change in the relationships with the dead. In Middle Bronze Age cremation cemeteries, mortuary rites focused on the burial of funerary remains rather than on the long-term engagement and manipulation of human remains associated with Early Bronze Age barrows (Appleby 2013: 92). At the start of the Late Bronze Age, formal burials disappeared from the mortuary record (Bradley 2007: 202). This again indicates that bodies were disposed of in ways which are not archaeologically visible, although the evidence – skulls found in rivers or other watery locations, and small deposits of cremated bones in pits, some associated with roundhouses and middens – also suggests active practices associated with the manipulation of human remains (Bradley 2007: 202, Brück 1995, Cooney forthcoming, McOmish 1996).

2.1.2 Bodies as objects: on the manipulation and circulation of human remains

The human body represents an important resource within archaeological research (Sofaer 2006: 12). The sequences of ritualised actions used to deal with corpses – whether in terms of pre-depositional mortuary rites, placement and orientation within the grave, or manipulation of the remains after the burial – can potentially help us to identify contextually specific strategies used by the living to redefine relationships, genealogical status and power structures amongst the mourners (Barrett 1990: 184, Fowler 2015, Parker Pearson 1999, Sofaer 2006: 19). Following death, the corpse can be manipulated in a variety of ways which may involve a range of practices such as exposure, defleshing, dismemberment, burning and mummification (section 2.1). These processes may also extend beyond burial, as graves can be re-opened to reorganise or remove the remains (Appleby 2013: 87, Weiss-Krejci 2011: 69). A careful and detailed analysis of the nature of human bone deposits within prehistoric contexts can help us to reconstruct the various stages associated with mortuary rites, and to discuss the possible meanings behind such practices.

Deliberate choices are made in the positioning of the bodies in the grave, some of which may be meaningful. Within the corpus of the British Neolithic and Bronze Age graves, bodies were most commonly placed in crouched (or foetal) and extended supine positions (Bradley 2007, Darvill 2010). Both these may reflect a desire to reproduce positions associated with sleeping. The alignment of bodies within the graves may also have been significant. Much variability has been recorded in the orientation of British Early Bronze Age inhumations, although an east-west alignment with the body facing south is the most common (Fowler 2015, Shepherd 2012, Tuckwell 1975). Bodies may have been orientated in this way as to face the position which receives most sunlight (Fowler 2015: 66). Variability within grave orientation also suggests that in some cases the bodies were aligned to face specific features within a particular landscape.

Another deliberate choice in the treatment of the dead is to burn the bodies before burial. Both inhumation and cremation burials are frequently found within individual burial mounds, or even within the same graves (Appleby 2013, Gibson 2007, 2016). Antiquarians often interpreted this variability within the mortuary record as to reflect differences in the status of the deceased: dead warriors placed in a central grave surrounded by the cremated bodies of defeated enemies (Dearden 1851), or the remains of important chiefs accompanied by the cremated bones of slaves killed after his death (Wynne-Ffoulkes 1851b). The simple inhumation/cremation dichotomy as a possible indicator of status is still discussed today, although such interpretations have been critiqued for their over-simplification of the processes involved. The difference between inhumation and cremation represents an inherent conflict between the desire to preserve bodies and to transform them (Rebay-Salisbury 2013). Despite this, however, these two modes of burials often share similar practices associated with body treatments (Rebay-Salisbury 2015). Appleby (2013) argued that many stages of mortuary rites may have been the same for buried bodies and burnt bodies, whether in terms of pre-treatment of the bodies (e.g. defleshing, dismemberment, mummification, etc.), position of bodies in the grave or on the pyre (crouched or extended), and post-mortem practices which involved the manipulation and exchange of human remains. However, an important difference exists between the materiality of post-burial bodies and post-cremation bodies: whilst buried bodies are still anatomically identifiable, the cremation process leads to the destruction of bodies into unrecognisable bone fragments (Sørensen and Rebay 2008). As such the cremation process “removed any traces of individuality from the skeletal remains” (Appleby 2013: 91). However, this does not mean that the cremation deposits themselves became anonymous. The cremated bones from the deceased could be collected from the pyre and placed within containers (wooden boxes, leather/cloth bags, pottery vessels, etc.). Such containers may have acted as strong metaphors for the human body, as the unrecognizable bone fragments were once more re-united into a single 'body' which represented the embodiment of the deceased individual (Sørensen and Rebay 2008). Several choices are then available as to the ways in which the remains are handled, from the short- or long-term curation, the exchange and circulation of token amounts of cremated bones between the living (see below), or the deposition of the remains in natural places or monuments.

The burial data now suggests that the ways in which the dead were treated in the British Neolithic and Bronze Age were a lot more varied than previously thought (Appleby 2013, Gibson 2007). One of the most striking examples of the manipulation of human remains comes from Cladh Hallan in the Outer Hebrides: two of the mummified skeletons from under the floor of roundhouses were found to represent composite bodies made from the bones of different individuals (Hanna *et al* 2012, Parker Pearson *et al* 2005). The radiocarbon evidence suggests that at least one of the male skeletons had died centuries before the burial (Parker Pearson *et al* 2005: 539).

The Cladh Hallan skeletons raise several important points on the nature of Bronze Age burials. Firstly, these burials suggest the possibility that mortuary rites can include a liminal period in which the flesh and soft tissues were left to decompose. One way to achieve this is through the exposure of bodies on man-built platforms or in natural features such as rockshelters (King 2003). Possible examples of excarnated bodies in the Early Bronze Age have been identified at Bredon Hill, Worcestershire (Thomas 1965) and Boscombe, Wessex (Mckinley 2011). Another possibility is that the bodies were buried and the graves re-opened following partial or complete decomposition of flesh and soft tissues (Appleby 2013).

Secondly, the Cladh Hallan burials also suggest that the post-mortem manipulation of body parts played a role in Bronze Age mortuary practices.

These practices may have taken place anytime from soon after death to years later as suggested by the Cladh Hallan radiocarbon dates. The burial evidence shows that a wide and diverse range of post-mortem practices existed within the repertoire of Bronze Age mortuary rites, which include the deposition of articulated, disarticulated and incomplete skeletons in the same burial feature (e.g. Bee Low, Derbyshire: Marsden 1970; Linlithgow, West Lothian: Cook 2000 and Boscombe Bowmen, Wessex: Fitzpatrick 2011); the deposition of skeletons with missing bones (e.g. Manston, Kent: Perkins and Gibson 1990 and Bowscombe grave 1502: McKinley 2011); and the deliberate arrangement of partial skeletons in the grave to resemble a complete crouched inhumation burial (e.g. Newborough, Northumberland: Newman and Miket 1973) (Appleby 2013, Gibson 2007, 2016). At Cladh Hallan, individual bones were used to reconstruct a body with preserved anatomical order (Parker Pearson *et al* 2005). Could this perhaps reflect a desire to metaphorically reconstruct relationships that the individuals had in life? Another explanation may be that the combination of bones from different individuals represents a means to merge the identities of the deceased in order "to amalgamate different ancestries into a single lineage" (Hanna *et al* 2012: 2274). The practice of re-opening graves for the deposition of secondary burials discussed previously in this chapter may also have reflected a similar desire to reproduce or highlight past living relationships. Finally, the Cladh Hallan burials also highlighted the possibility that mummification may have been more common than previously thought in the Bronze Age period throughout Britain (Booth *et al* 2015). It has also been suggested that bodies may have been mummified before prior to being cremated (Appleby 2013), although such a practice cannot be currently demonstrated based on the archaeological evidence.

Several examples of incomplete skeletons have been recorded from Bronze Age burials (Gibson 2007, 2016). Taphonomic processes within the burial environment can account for the destruction of smaller or more fragile bones (Turner-Walker 2008, Waldron 1987). However, in cases where larger and stronger skeletal elements are missing (e.g. denser and heavier skull bones, spine and long bones: Waldron 1987), it is conceivable that these bones had never been deposited in the grave in the first place. This raises the possibility that human remains may have been manipulated and circulated amongst the living. Several objects found in Early Bronze Age graves such as belt hooks, tubes, tools and pendants, were shown to have been carved from human bone (Woodward and Hunter 2015: 555-557). Such artefacts were most likely highly symbolic, as body fragments acted as powerful mnemonic objects of the dead. These objects may have been circulated and exchanged amongst the living (see below), but it is also possible that they were kept as personal amulets for the remembrance of loved relatives. Such a practice is still popular today, as mourners can choose to wear cremation jewellery (beads, pendants, bracelets etc.) which contain a small amount of ashes from the deceased.

The weights of cremated bone burials in the Bronze Age period have also often been shown to be well below the expected average weight for a cremated body (Gibson 2007, Walsh 2013). Although several variables may account for this, such as the accidental loss of cremated bone when the bones are collected from the pyre, or due to acidic soil conditions which destroy the bones (McKinley 1997, Wahl 2008), another possible explanation is that some of the bones may have been deliberately kept out of the burial to be manipulated and circulated. Chapman (2000a: 27-28) suggested that the exchange and structured deposition of deliberately fragmented artefacts, each with their own biographies, served to reinforce social ties between communities, a type of process termed ‘enchainment’. Similarly, token amounts of cremated human bones could have been circulated and exchanged in order to emphasize and maintain social relationships and kinship ties within Bronze Age communities in Britain (Brittain 2006, Brück 2009). Fowler (2001) suggested that bone fragments circulated within society may have acted as a currency that was culturally significant. Alternatively human bones and perhaps animal bone deposits could have been retained as an amulet with specific properties of protection or intimidation. Although these theories are difficult (if not impossible) to ascertain based on the archaeological evidence, they highlight the concept that prehistoric funerary practices may have involved highly ritualised processes which extended beyond the time of burial (Fowler 2013: 80).

2.2 Identity and the burial record

The question of "who were these people?" is central to the interpretation of the funerary record of past communities (Gibson 2016). Archaeological interpretations are based on a wide range of themes which examine the complex relationships between monuments, bodies and artefacts. This section outlines the key topics relevant to this study associated with the reconstruction of past identities and ethnicity within the burial record, which include biological identity (section 2.2.1), body treatments (section 2.2.2) and grave goods (section 2.2.3).

2.2.1 Biological identity: age-at-death and sex

Within the study of the archaeological record, individuals are examined at a single point in their life – death. Individuals are placed within static age categories in order to examine whether patterns can be identified between their biological identity and the ways the bodies were treated after death (Chamberlain 1997). However, more recent theoretical approaches have highlighted the need to discuss the implications of ageing as a process (Sofaer 2006: 128). Whilst biological or physiological age relies on the state of maturity and/or amount of degenerative changes to the skeleton (section 4.2.4), social age is a socio-cultural concept related to the ways individuals from different ages were perceived within society (Sofaer 2006: 119). Physiological changes to the body throughout the life course have a major impact on the creation and manipulation of social identities (Robb 2002). The ways in which age-related body modifications throughout the life cycle are perceived are culturally variable (Sofaer 2006: 119). As such the mortuary record should not be examined in terms of rigid biological age categories, but rather as a system of relationships between individuals from different stages of life. Factors such as menarche and reproductive status, marital status, birth order and generational relationships play important roles in the construction of social identities (Appleby 2010).

Several theoretical issues have been raised on the use of age categories to analyse the mortuary record. A distinction is often made between children (defined as non-adults in this study) and adults. Non-adults are characterised as individuals who have not reached full skeletal maturity (Sofaer 2006: 121).

However, this difference is highly problematic as the ways in which childhood is defined is culturally variable (Chamberlain 1997). The change in status from 'child' to 'adult' may have occurred before all the growth-related physiological changes to the bodies took place. The anthropological record suggests that this shift in social status most commonly occurred through rites of passages (La Fontaine 1985). This therefore highlights major limitations within osteological studies on the use of growth patterns on the skeleton for ageing non-adults (Sofaer 2006: 121).

Issues have also been raised on the absence of children within the interpretative framework of archaeological studies. Children are often treated as automatons which do not actively participate with the political and social spheres of communities (Sofaer 2006: 126). This reductionist view stems from the fact that children are defined as incomplete adults in relative terms (Baker 1997). However, as demographic studies suggest that for a past population to remain stable or grow, at least half of living individuals within the society were non-adults (younger than 18 years) (Chamberlain 1997). Children were therefore far from invisible within past communities. Older adults represent another age group often overlooked in archaeological interpretations (Chamberlain 1997). Adults are often discussed as a single age category (Appleby 2011). However, as discussed above, physiological changes to the body throughout the life course represent an important signifier of social identity. Within the contemporary Western culture, older individuals are often regarded as being marginalised within the society (Appleby 2011). However, it is possible that communities in the past viewed the social roles of elders differently. Furthermore, the assumption that people in the past did not live beyond the age of 50 is now contested: demographic studies suggest that all living populations, regardless of crude mortality rates, include a proportion of individuals living to at least 80 years old (Chamberlain 1997). As with children, grandparents should therefore not be cast out from the archaeological discourse.

One important issue related to the reconstruction of past biological identities concerns the distinction between biological sex and gender. The recognition of differences between biological sex and gender is now well established within archaeology (Sørensen 2007). In broad terms sex is viewed as a classification based upon biological differences between men and women (section 4.2.3). As such sex, or sexual difference, is viewed as a cross-cultural term universally applicable. The degree to which biological sex can be seen as a fixed biological given has been called into question since the late 1980s and 1990s within feminist archaeology (Brown 2009, Gero and Conkey 1991, Miller 1993, Sofaer 2006, Whitehouse 2007).

In contrast, gender is seen as socially constructed, played out through material culture dress, substances and bodily performance (Caplan 1987, Gilchrist 1999, Sørensen 1991, 1992, Whitehouse 2007). Interpretations of gender are fluid and socially specific (Moore 1994). As such modern gender studies focus on gender as being a fundamental element within the construction of social identity (Butler 1990, Moore 1994, Sørensen 2000). Whilst gendered identity is clearly linked to sex and age (Sørensen 2000, 2007), the recognition of multiple genders within the ethnographic record illustrates the complexity of its identification archaeologically (Nandra 1990, Whitehead 1981, Whitehouse 2007).

Whilst we have osteological techniques for the identification of sex and age in skeletal remains, the recognition of gender within the archaeological record is considered problematic. Equally it is common to consider bodies as sexed and objects as gendered, creating a split within archaeological interpretation between the study of human remains and material culture (Whitehouse 2002). However, the use of osteological methods, and the criteria they produce, may provide the best foundation for the study of gender and social identity within the burial record (Sofaer 2006). Whilst osteology cannot identify gender directly, the methodologies identify through formal analysis key categories that historically and ethnographically are fundamental to the formation of engendered identities (age groupings, sex, diet etc.). The identification of these attributes creates a potential structure through which to explore gender (Sofaer 2006). The body thus has a pivotal role in the archaeological study of gender, as the association of artefacts with particular categories of bodies imposes culturally constructed gender onto biological sex (Sofaer 2006).

2.2.2 Body treatments

Biological and social identities may have played important roles in how the dead were treated and disposed of in the past. This section aims to examine patterns and possible meanings behind the ways bodies were treated in the Middle Neolithic to Middle Bronze Age periods in Britain.

The mortuary record for the Middle Neolithic to the start of the Early Bronze Age in Britain (*c.* 3600-2100 BC) suggests that formal burials in man-built graves and monuments were relatively rare, except for the Late Neolithic passage grave tradition (Gibson forthcoming). Historically there has been a tendency to characterise particular funerary practices as normal or typical for a particular period (Brück 1995, King 2003). However, we should not forget that the majority of burials from the Neolithic and Bronze Age are archaeologically invisible, disposed of in a way that does not leave archaeological evidence, or does not conform to pre-conceived ideas of what constitutes a burial (Bradley and Gordon 1988, King 2003). An example here would be the use of natural places such as caves, rockshelters and rock fissures, as sites for the interment of the dead during the Neolithic and Early Bronze Age (Barnatt and Edmunds 2002, Bradley 2000, Dawkins 1874, Mullins 2001). Whilst man made monuments have been the focus of extensive excavation and study, natural places are difficult to identify archaeologically and have therefore received less attention. Such cases are problematic for archaeological analysis as they are typified by multi-period comingled deposits with poor stratigraphic definition and are thus poorly dated. As a result of the problematic nature of these deposits few have been studied in detail. However, burial within natural places during the Neolithic and Early Bronze Age may not be unusual and may be suggestive of a greater variety of practices than is evident from the current archaeological evidence.

This therefore raises the issue of why the bodies of some individuals were buried in man-built funerary structures (burial pits, cists, round barrows, passage graves, etc.) at times when formal burials were uncommon. Why were some people treated differently in death within these prehistoric communities? Traditionally it would have been argued that these funerary structures belonged to particular ethnic or cultural groups, and that their distribution across the landscape reflects population movements (Childe 1925, Holmes 1907, Grimes 1951). Although such an explanation may today seem old-fashioned, the restricted distribution of some monument types, as for example Late Neolithic passage graves around the Irish Sea, does suggest that these may have represented the burial monuments of communities which shared similar mortuary belief systems. Another popular interpretation was that these uncommon formal burials reflected the higher or special status of these individuals based on the time and efforts involved in the construction of burial structures (Renfrew 1973). Such an explanation may be over-simplistic as the size and extent of burial monuments do not necessarily reflect social status or wealth (Parker Pearson 1982). However, the fact that these formal burials deviate from the normative funerary rites, which in the period between 3600-2100 BC involved the disposal of bodies in ways which are not archaeologically visible, does suggest that these individuals were in some ways special or different (Gibson 2016).

The archaeological and ethnographic records suggest that several explanations may account for deviant burials, from people ritually sacrificed, ‘social deviants’ such as criminals and outcasts, to individuals who died from unusual causes such as diseases or accidents (Aspöck 2008, Weiss-Krejci 2011: 76). Individuals located on the periphery of the lifecycle may also have been subjected to differential burial treatments. Examples from the Irish mortuary record include the deposition of infants in liminal spaces (passages) in Late Neolithic passage graves, to the more recent *cillíní* (children’s burial ground) located in marginal spaces (Donnelly and Murphy 2008, Finlay 2000). It is also a possibility that, in terms of the Early Bronze Age mortuary record, the ‘odd’ or unusual burial practices described previously (section 2.1.2) could also represent individuals of different or special statuses.

Patterns identified within the corpus of Early Bronze Age burials in Britain suggest that biological sex had an influence on the treatment and disposal of corpses in graves. Sofaer Deverenski (2002) identified a number of associations in burial contexts in the Upper Thames Valley. Flat graves predominantly contained males. Females were most commonly buried in barrow cemeteries than males. Whilst males tended to be deposited at the centre or outside the barrow, no clear distribution pattern can be identified in the location of females in burial mounds. For crouched inhumations, men were most commonly placed on their left side and females on their right side. A similar male/left and female/right pattern was also identified in Beaker burials from Yorkshire (Tuckwell 1975). Biological sex may also have had an impact on the type of burial, with males more commonly found in inhumation burials and females in cremation burials (Brück 2009, Walsh 2013: 123). These patterns definitely suggest that conceptually distinct notions of ‘men’ and ‘women’ existed within these prehistoric groups (Sofaer Deverenski 2002). Variability in the contexts and types of burial modes between sexes could be seen as a means for the expression of differences in gender identities.

Early Bronze Age graves sometimes contain the remains of multiple individuals buried simultaneously (Petersen 1972, Fowler 2013: 164, Walsh 2013: 181). This raises several questions on the identity of these people: who were these individuals and why were they buried together? The simplest explanation is that these individuals died around the same time, perhaps due to an accident, through warfare, or due to an infectious disease. ‘Mother and neonate’ burials could represent individuals who have died during childbirth (Finlay 2000). It is also possible that bodies were curated for a period of time before their burial with another person, perhaps in other to metaphorically re-create family relationships in death (section 2.1.2). However, the DNA analyses carried out on four individuals in a pit at Monkton Up Wimborne, Dorset, suggest that we should not assume that people buried together were always related: the grave contained the remains of four individuals, a mother and daughter, as well as two young siblings (probably brother and sister) unrelated to the first two individuals (Green 2000: 78-79). Furthermore, stable isotope analyses suggest that these people came from elsewhere (possibly from the Mendips) (Green 2000: 79). The Monkton Up burial not only indicates that Bronze Age communities were mobile, but that the identity of the deceased individuals in particular graves – in this case two groups of unrelated foreigners – may be far more complex than previously envisioned (Gibson 2016).

2.2.3 Grave goods

The analysis of grave goods has played an important role in the reconstruction of past individual identities. The traditional approach is based on the assumption that the types of grave goods are a direct reflection of the identity and status of the deceased (Barrett 1990, Parker Pearson 1999: 78). In the antiquarian period, burials accompanied by flint arrowheads, bronze daggers and knives were thought to represent the remains of warriors (Fenton 1860, Williams 1852, Wynne-Ffoulkes 1874). The presence of animal bones was also seen as a reflection of the individual's status: "A remarkable fact is the existence of animal bones… deposited by the side of their deceased master as emblematic of his former power, wealth, and pursuits" (Williams 1852: 90). The idea that burials with 'rich' grave goods represented individuals of a higher status has remained popular since the antiquarian period (Bradley 2007: 159). Grave goods were seen as a means to display wealth and power by a rich migrant aristocracy (Piggott 1938), or by an indigenous 'elite' class of chiefs and warriors (Ashbee 1978: 173, Renfrew 1976: 269). The traditional interpretation of burials accompanied with personal belongings is that this association reflects the role, status and wealth of the individual within a newly emerging stratified society. On the other hand, the absence of 'rich' burials at the end of the Early Bronze Age period was interpreted as evidence for social devolution: "In particular the disappearance of 'privileged' burial… suggests the collapse of unequal societies with all their symbols, and their replacement by a new social order" (Burgess 2001: 175).

Objects deposited in graves have also been used for the reconstruction of the past social roles of the deceased. Those buried with unusual items – multi-coloured pendants, polished stone palettes, special miniature vessels, etc. – were seen as to represent the remains of shamans or ritual specialists (Woodward 2000: 119-122). Patterns between sex and artefact types were interpreted as to reflect gender-based differences in social roles in Early Bronze Age communities: males were buried with 'weaponry' such as flint arrowheads, daggers and axes, and females with ‘mundane’ artefacts such as flint scrapers, or with jewellery (Brodie 1997, Clarke 1970: 265, 448). Brodie (1994: 18) also observed that exotic or prestige goods were more often associated with older individuals in Beaker burials in eastern Yorkshire, which could suggest that elders played a valued role within these communities.

More recently, however, the idea that mortuary variability can be used as a direct reflection of past social identities and structural organizations has been criticized. This stems mainly from the issue that funerary practices in the past most probably involved ritualised processes which cannot be ‘read’ from the archaeological record alone (Fowler 2013: 80). Burials are social events, staged performances that provide the opportunity for communities to reconstruct themselves after the disruption of death (Barrett 1990, Parker Pearson 1999, Sørensen 2004). As such grave goods do not unreservedly communicate the social identity of the dead; rather the grave goods gifted by mourners help construct the deceased’s identity. Brück (2004: 311) suggests the grave goods placed by mourners allowed them to “comment metaphorically on the links between the dead and the living”. In this sense objects do not represent the individual social persona of the deceased, but are a reflection of relational identities (Brück 2004).

Furthermore, the ethnographic evidence demonstrates that for archaeologists, the identification of social status from grave goods is not straightforward. The meanings attached to grave goods are variable and cannot be read uncritically. Ucko (1969: 266) demonstrates this potential complexity through the use of a series of ethnographic examples from Ghana. Ethnographic evidence shows that grave goods and offerings may have played an important role in the funerary process without being incorporated within the grave. For example, the Lo Dadaa of Ghana place only minimal objects with the dead as most are consumed during funeral rites and ceremonies (Ucko 1969: 266). Whilst for the Lober of Ghana grave goods such as weapons accompany and are displayed with the dead prior to burial so that the deceased may symbolically take these items with them to the afterlife. Once this process of display is complete the body is buried in the grave unaccompanied by grave goods.

Whilst the Nankanese of Ghana do not place grave goods with the dead, items such as bangles and arrowheads are found within their burials. These objects represent offerings to spirits, left by those involved in the funeral process to prevent their souls becoming trapped within the tomb (Ucko 1969: 265). These objects are not representative of the deceased status or social identity and do not demonstrate relationships between the dead and the living. Their inclusion within burials represents a necessary element of a complex funerary process where the dead are considered as dangerous to the living. Grave goods may act as solid metaphors that can only be read within specific cultural contexts. For example, the Ibn of Borneo place knives within the graves of the dead to metaphorically symbolize the dead individual being severed from the living (Shushan 2009: 34).

The richness of grave goods as an indicator of social status can also be called to question. The preservation of the funerary record plays a fundamental factor in how we interpret the significance of burials. Traditionally it has been assumed that rich burials containing grave goods such as pottery, metalwork and other exotic materials can be used to identify social status. However, this notion does not take into account grave goods that frequently do not survive within the archaeological record. This fact is highlighted by the discovery of an Early Bronze Age cist burial at Whitehorse Hill on Dartmoor (Jones *et al* 2014, Jones 2016a). This burial, whilst located within acid soils, demonstrated remarkable preservation of organic material. The burial comprised of a cremated bone deposit accompanied by a wide range of organic and inorganic grave goods (Jones *et al* 2014). The base of the stone cist was covered in purple moor grass, which had probably been collected during the late summer. Upon this organic layer were the remains of a composite nettle-fibre and calf-skin object, interpreted as a garment or sash. Above this was a pelt, taken from the hind quarters of a bear, that had been folded over to act as a container for the cremated human remains. A copper alloy awl found with the cremated bone may have been used to secure the pelt (Jones *et al* 2014: 19). At one end of the pelt was a lidded cylindrical basket. Within this basket were found a flint flake, a set of jewellery comprising a bracelet, a necklace and two wooden studs. The bracelet had been made of braided cattle hair slotted in and around 35 small tin studs set at regular intervals along the braiding (Jones *et al* 2014: 19). The necklace comprised of seven amber beads and 92 beads of Kimmeridge shale set around 110 clay disc beads. A cylindrical tin bead probably formed the centrepiece of the necklace (Jones *et al* 2014: 20). The burial also contained two turned wooden ear or lip studs. The deposits were covered in a layer of matted plant material. A concentration of meadowsweet pollen suggests that a floral tribute was deposited with the burial.

Under normal conditions little which makes the Whitehorse Hill cist burial special would have survived, as tin usually oxidises in acid conditions and organic material would not be preserved. This burial would be classified as a cremated bone deposit accompanied by a small but impressive range of grave goods, not dissimilar to other burials found throughout Britain. The question highlighted by this burial is to what degree has the burial record for prehistoric Britain been lost through poor preservation, and whether the elements of the record that archaeologists study out of necessity are the most significant?

Ornate items such as dress pins and beads may not necessarily belong to the dead even though they accompany the body through inhumation or cremation. The social value of an object is not related solely to its intrinsic exotic worth, but also to the value that it has accrued over the years in relation to specific human individuals, to families or to other social groupings, or to its significance in systems of reciprocity or exchange. Woodward (2002: 1043) argues that such items were treasured possessions and heirlooms. For example, the prevalence of jet and jet-like objects in Wales has been studied by Sheridan and Davies (1998). They concluded that the objects found include objects that have been in circulation for a long time prior to placement within burials and objects that have recently been made, perhaps solely for their inclusion within burials. They note that objects manufactured from true jet showed heavy wear and tear and signs of recycling; this indicated that the objects had been used for lengthy periods of time and may have been treasured heirlooms (Sheridan and Davies 1998: 160). In contrast objects made from jet-like material such as cannel coal were found with visible file marks upon the surface, suggesting that they were not very old when they were deposited, which perhaps indicates that they were made or acquired for deposition (Sheridan and Davies 1998: 160).

Objects found in Bronze Age burials are frequently deliberately mutilated so as to become unusable (Brück 2006). In some instances objects accompanying the body through the cremation process are rendered unrecognisable. In other instances objects placed within the grave are deliberately smashed or broken. Bradley (1982: 120) has argued that the destruction of wealth at funerals, and probably on other occasions, was one very striking way of achieving or maintaining rank in prehistoric society. In contrast such acts of destruction may have represented powerful, symbolic statements on the social impact of death. These items could never again be reused, just as the relationship that they had once sustained and signified had themselves come to an end. Brück (2006: 78) suggests that the destruction of these objects was instigated by the death of the individual and is a demonstration, materially, of how death causes disruption and how objects and people may be intimately intertwined.

Upon death, pottery vessels were frequently deliberately broken and the discoveries of sherd fragments are regularly found in Early Bronze Age burials (Brück 2006: 78). Whilst many of these vessels may have been the property of the deceased or have been made specifically for the burial rite, a small, but growing, number of instances suggest an element of curation. Woodward (2002: 1041) has noted that Beaker sherds from the Lockington Barrow in Leicestershire were heavily abraded, suggesting that they were already old when deposited and may have functioned as carefully curated family or ancestral heirlooms. The potential significance of the curation of heirlooms is at present poorly understood. Woodward (2002: 1041) speculatively suggests that sherds may have been ground up to form potential grog for incorporation in newly produced pots. Thus the essence of important pots belonging to significant individuals or families could be preserved and passed down through the generations in finite and often visible form. Brück (2006: 80) suggests that deliberately broken artefacts and the way human bodies were treated on death show similarities and that “the boundary between people and things was not defined as sharply in the Bronze Age as it is in the modern western world”.

2.3 The interpretation of *ritual* monuments

In order to discuss the function of the prehistoric sites examined within this study, monuments were classified either as ‘funerary’ or ‘ritual’ in nature. However, it is acknowledged that such a simple classification is problematic. Monuments which were not built primarily as funerary structures have traditionally been classified as ritual monuments, which include for example henges, pit circles, timber circles and stone circles. Based on the absence of burials within these structures, antiquarians interpreted them as commemorative monuments (ELB 1861, Williams 1850), places to perform religious ceremonies (Moggridge 1860, Rees 1854), or as territorial markers (Smith 1865). Subsequent interpretations on the purpose of these structures have also centred upon these themes. Henges for example have frequently been described as “principal monuments” used to delimit territories within hierarchized Late Neolithic societies (Burgess 2001: 325, Renfrew 1976: 254). Based on the labour and time invested in the construction of the structures, the largest circular enclosures are seen to “represent displays of power, wealth, and control” (Darvill 2010: 163). Circular enclosures are also often thought to represent public or communal spaces used as meeting places to feast, perform ritual ceremonies, and trade (Burgess 2001: 327, Darvill 2010: 149, 165, Renfrew 1976: 259). The alignment of some of these structures – as for example the entrances of stones circle aligned on summer/winter solstices – has led to the suggestion that activities carried out within these spaces were linked to specific celestial or astronomical events (Burgess 2001: 344). For example, recumbent stone circles in north-east Scotland tend to have lunar orientations (Burl 2000: 226-227, Ruggles 2014). On the other hand, some timber circles, such as Sarn-y-bryn-caled 1 in Powys, seem to have cardinal (and thus solar) orientations (Gibson 2005: 101-103).

The ritual nature of these monuments is emphasised by the type of artefactual evidence found at these sites (Burgess 2001: 325ff, Bradley 2007: 126-128, Darvill 2010: 163-167). Pits associated with these monuments often contain artefacts (some of which were fragmented at the time of deposition), charcoal, and token deposits of cremated bones. The term ‘ritual’ is applied in this context to deposits which are primarily non-funerary in nature, although their specific purpose or significance remains speculative. In some instances the sites had been revisited over a period of time, as for example the pit circle at Sarn-y-bryn-caled, Powys, where individual pits contained sherds of Peterborough Ware, Grooved Ware and Beaker pottery (Blockley and Tavener 2002). Analyses on the soil attached to cremated bones from the ring cairns at Moel Goedog, Gwynedd (Lynch 1984b), and Great Carn, Glamorgan (Ward 1988), have shown that the cremated bones had been interred elsewhere before their final deposition within these monuments. This therefore suggests that some token cremated bone deposits (and possibly other types of artefacts) may have been curated elsewhere before their final deposition within ritual monuments (Cooney forthcoming).

The traditional distinction between 'funerary' and 'ritual' monuments has recently been criticised. The first issue is that the term 'ritual' is frequently used as a blanket word to describe any deposit or structure for which its primary purpose is difficult to ascertain (Brittain 2006, Brück 2004). Secondly, this distinction is blurred by the fact that both burial and ritual deposits are found within some of these monuments. This includes for example burial deposits associated with ritual monuments – such as timber circles (Gibson 1994), stone circles (Griffiths 1960) and standing stones (Hemp 1932) – or evidence for ritual activities in funerary monuments (e.g. Fox 1959, Gibson 1993b, Hemp 1930, Lynch 1971, 1979, Powell and Daniel 1956). Whilst some would argue that burial deposits within ritual monuments possibly represent 'special' individuals – from the "single dynasty of local rulers, shamans, or medicine men" at Stonehenge to an adult female killed in a ritual sacrifice at Sarn-y-bryn-caled 1 (Darvill 2010: 148, 152) – the idea that a strict funerary/ritual dichotomy may not have existed within prehistoric belief systems is also equally possible (Brittain 2007, Brück 2004, Last 2007).

The value of the concept of ritual, particularly in relation to prehistoric monuments, has been called to question. Such a concept remains problematic unless we can clearly define what we mean by such a term and how it can be identified. Unless differences can be clearly distinguished archaeologically between ritual and non-ritual activities, their use as a tool for analysis is seriously weakened. Brück (1999) has shown how the concept of ritual used within archaeology and anthropology is a product of post enlightenment rationalism that is not necessarily applicable to other cultural and historical contexts. Indeed, ethnographic studies suggest that many societies do not distinguish between ritual and secular action and that what many anthropologists have identified as ritual is generally considered practical and effective action by its practitioners (Bell 1992, 1997, McCarthy Brown 1995). This is because different conceptions of instrumentality and causation inform such activities. Within archaeology the concept of ritual is frequently used as an 'explain all' term to describe phenomena that does not meet modern western criteria for practical action, and is therefore described as non-functional and irrational. The definition of ritual as 'non-functional action' has become the single most important characteristic for identifying ritual archaeologically. One important consequence of this has been that what has been categorised as everyday action, such as subsistence practices, is seen as being governed by a universally applicable functionalist logic. Brück (1999) suggests that we need to jettison the notion of ritual and everyday from our accounts of the past. For her, ritual and everyday are the same side of the coin – any practical action is simultaneously symbolic because it reproduces sets of values and social relations. In adopting the notion of ritual as practical and effective action, we are acknowledging that there is an alternative form of rationality in the past, which is quite different from a functional or economic logic. Hence, the question 'can we identify prehistoric ritual?' is unhelpful; instead, we should ask 'what can past actions tell us about the nature of prehistoric rationality?' (Brück 1999, Chapman 2000b).

2.4 Summary and research justification

The examination of the burial record of past communities can provide invaluable data on the nature and belief systems of these groups. Such analyses involve the identification of patterns within the mortuary data (Chamberlain 1997). Archaeologists aim to uncover the sets of underlying rules which dictated the ways in which the dead were treated in terms of the manipulation and disposal of bodies in the graves, as well as in the choices of objects placed with the corpse. Such deliberate choices are ultimately made by the living, as the dead do not bury themselves (Ucko 1969). Biological identity (age-at-death and sex), body treatments and grave goods may have acted as powerful signifiers of identity. Questions on who (and who has not) entered the burial record, and why their bodies were treated in particular ways, are therefore central to the archaeological discourse (Sofaer 2006: 118).

The ways in which the dead were treated in the British Neolithic and Bronze Age are complex and varied (section 2.1). Both inhumation and cremation practices took place throughout these periods. Both burial practices occur within and outside of constructed monuments. In recent years archaeologists have identified evidence for other forms of burial practice, such as the preservation, or mummification, of corpses (Booth *et al* 2015), and for the manipulation of human remains before or after their final deposition (Appleby 2013, Gibson 2007). Burials may be contained within pots or bags, or not enclosed in a container, and placed directly within the burial context (Jones 2016a). Burials may be accompanied or unaccompanied by grave goods. The burial record is thus comprised of an interplay of practices that creates a system of objects available for archaeological study: a complex relationship between monuments, bodies and artefacts. Differences in the articulation of burial practices most likely relates to regional traditions within Britain. Whilst variation occurs, archaeologists have been able to identify broad similarities within burial traditions that have allowed meaningful analysis to be possible. However, the key point here is that we should not expect conformity within the burial record and equally cannot apply uncritically generalised interpretations of this record as regional traditions may vary or be site specific.

A major issue associated with the interpretation of the mortuary record from the Middle Neolithic to the Middle Bronze Age (MN-MBA) periods in Wales is the lack of a strong body of archaeological data. Although brief summaries on the nature of funerary rites for these periods have previously been published (e.g. Burrow 2011, Fox 1959, Grimes 1951, Lynch 2000), these works are mostly out-of-date or too brief to truly examine the complexity of funerary practices within the Welsh context. The present study therefore aims, through a detailed analysis of contextual and demographic data, to define the character of MN-MBA burials in Wales.

The development of more accurate absolute and relative chronologies has played a significant role in the interpretation of prehistoric funerary and ritual practices in Wales. However, no detailed study has so far been undertaken to collate and analyse artefactual and radiocarbon data from all excavated MN-MBA funerary and ritual sites in Wales. Chapter 3 of this thesis provides a detailed analysis of the dating evidence in order to establish a chronological framework for MN-MBA funerary and ritual practices in Wales.

Variability in mortuary practices, from differences in the treatment of human remains to the types of associated grave goods, has often been examined to reconstruct past individual and social identities within prehistoric studies (section 2.2). Demographic data, based on the osteological analysis of human bone deposits, plays a major role in such analyses. However, the lack of a strong body of osteological data regarding the human bone material uncovered from prehistoric sites in Wales to examine the character of funerary and ritual practices is problematic. A modern re-assessment of the evidence, both in terms of contextual and osteological data (Chapters 5 and 6), is therefore needed to provide a better picture of the nature of MN-MBA funerary and ritual practices in Wales, and provides a basis from which to develop interpretations regarding gender and the life course (Chapter 7).

Chapter 3: The nature and chronology of Middle Neolithic to Middle Bronze Age funerary and ritual monuments in Wales

The purpose of this chapter is to establish a chronological sequence for funerary and ritual monuments in Wales between 3600-1200 BC. Two summaries of the dating evidence for this period have previously been published (Burrow 2011, Lynch 2000), although both works aimed to provide only general overviews of the chronology of monument types and burial practices. The radiocarbon and artefactual evidence presented here had never been collated, discussed and published in a synthesised form. This chapter contains the most comprehensive and up-to-date discussion on the chronology of Welsh Middle Neolithic to Middle Bronze Age funerary and ritual sites. This type of analysis will deepen our understanding of the nature of funerary and ritual practices for the periods examined.

The primary source of data used to develop the chronological sequence was the *Wales and Borders radiocarbon database* which contains more than 5550 radiocarbon measurements collated from published sources (Burrow and Williams 2008). However, as the database retrieved had not been updated since 2010 (Burrow, pers comm), it was supplemented with radiocarbon determinations from more recent excavations (2010 to 2014) which were taken from published excavation reports. A total of 301 radiocarbon determinations from Middle Neolithic to Middle Bronze Age funerary and ritual sites were identified from the *Wales and Borders radiocarbon database* and recently published excavation reports (Table 3.1, Appendix A). All radiocarbon determinations taken from the database and published reports were calibrated using OxCal v3.2.4 (section 1.5). Radiocarbon dates were considered inaccurate when they did not match the site stratigraphy and/or artefactual evidence.

The distribution maps in this chapter are based on data from the Historic Environment Record (HER) for Wales. HER data from all Neolithic and Bronze Age funerary and ritual sites was retrieved from the four Welsh Archaeological Trusts (WATs) during the first year of this research between July and

September 2011. This provided a defined dataset of monuments for the analysis. Due to time constraints and the large size of the dataset, no attempts were made to track down sites missing from the HER. Following the review of site records and fieldwork surveys undertaken by the four WATs between 1997-2003 as part of the pan-Wales *Prehistoric Funerary and Ritual Monument Survey* (Gibson 1998), it was assumed that the HERs were complete and up-to-date at the time of retrieval. The HER data for each individual site was transferred onto an excel spreadsheet which contained nine fields: Primary Record Number (PRN), site name, National Grid Reference (NGR), region, site type (broad), site type (narrow), diameter/length (in meters), height/width (in meters) and references to excavation reports (example of spreadsheet in Appendix B). The 'site type' fields were taken directly from the HERs (the standardised terminology for site classification in the HER can be found in Gibson (1998)). Distribution maps were produced with the ArcGIS 10.2.2 software using the site type and NGRs from the HERs

This chapter is sub-divided into five chronological periods. These sub-divisions are based on the date spans associated with ceramic traditions: Impressed Ware in the Middle Neolithic (*c.* 3600-2900 cal BC: Gibson 2010a: 66, Gibson and Kinnes 1997); Grooved Ware in the Late Neolithic (*c.* 2900-2400 cal BC: Garwood 1999, Gibson 2010a: 67); 'pre-fission' Beakers in the Chalcolithic (*c.* 2500-2200 cal BC: Needham 2005); 'post-fission' Beakers (*c.* 2200-1700 cal BC: Needham 2005), Food Vessels (*c.* 2200-1700 cal BC: Brindley 2007, Wilkin 2013) and Collared Urns (*c.* 2200-1500 cal BC: Needham 1996, Wilkin 2013) in the Early Bronze Age; and Barrel and Bucket Urns (*c.* 1700-1200 cal BC: Needham 1996) in the Middle Bronze Age. The end date for the Early Bronze Age used in this research (*c.* 1700 BC) is two centuries earlier than the commonly accepted date (*c.* 1500 BC: Roberts *et al* 2013). This early date was chosen in order to reflect the major changes in pottery forms which occur around the 18th century BC (end of Beaker and Food Vessel pottery traditions and early development of Bucket and Barrel Urns: Needham 1996, 2005, Wilkin 2013).

Table 3.1: Summary of sites with radiocarbon determinations (Appendix A).

Period	Site type	Number of sites	Number of radiocarbon dates
Middle Neolithic (*c.* 3600-2900 BC)	Pit grave	5	5
	'Formative' henge	1	6
	Timber circle	1	1
	Stone arc	1	2
	Total	8	14
Late Neolithic (*c.* 2900-2400 BC)	Ditched enclosure	1	6
	Stone circle	2	6
	Henge	1	2
	Passage grave	1	6
	Total	5	20
Chalcolithic (*c.* 2500-2200 BC)	Ditched enclosure	1	1
	Total	1	1
Early Bronze Age (*c.* 2200-1700 BC)	Round barrow	37	106
	Burial cairn	21	71
	Burial pit/cist	3	4
	Cremation cemetery	4	23
	Timber circle	2	12
	Henge	4	18
	Pit circle	2	6
	Total	73	240
Middle Bronze Age (*c.* 1700-1200 BC)	Round barrow	2	5
	Burial cairn	3	6
	Cremation cemetery	3	5
	Standing stone	5	6
	Stone circle	1	1
	Cremation pyre	1	3
	Total	16	26

3.1 Middle Neolithic (*c.* 3600-2900 BC)

The Middle Neolithic period is associated with the development of pit graves, for which five examples have been identified in Wales (section 3.1.1). Another type of monument which appeared towards the end of the fourth millennium BC is the circular enclosure, which includes the Meusydd I timber circle in Powys (section 3.1.2) and the stone arc at Bryn Celli Ddu in Anglesey (section 3.1.3). Although the 'formative' henge is another type of circular enclosure also thought to have been developed towards the end of the fourth millennium (Harding 2003: 13), there is currently little evidence that this type of enclosure was developed in Wales (section 3.1.4).

3.1.1 Pit graves

Pit graves refer to large pits with human remains, some of which may be found near Neolithic or Bronze Age ritual monuments (Gibson 1998: 5). Pit graves have so far only been identified in mid-Wales (Powys) and North-West Wales (Gwynedd and Anglesey) (Figure 3.1). It is possible that such a distribution reflects links with northern England where several examples of pit grave burials have been uncovered (e.g. Brewster 1984, Drewett 1975, Gibson and Bayliss 2009).

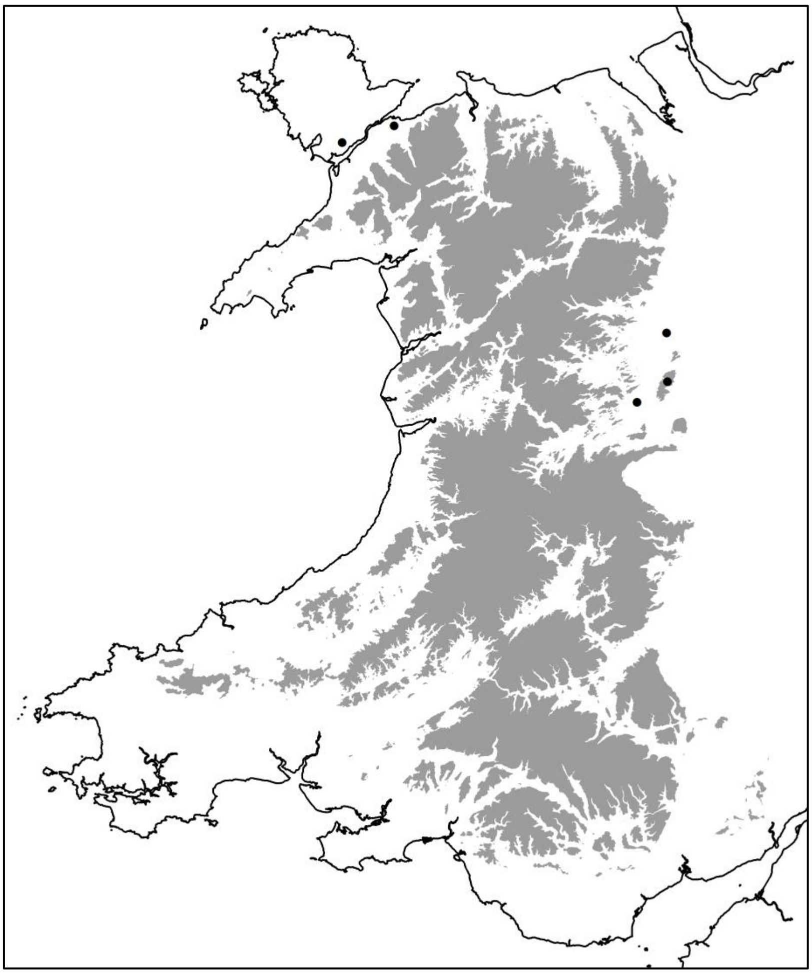

Figure 3.1: Distribution of pit graves in Wales (land above 230m shaded).

The Phase I pit grave at Four Crosses 5, Powys, dated to 3341-2921 cal BC (4440±70 BP, CAR-670), contained a central crouched inhumation accompanied by an Ebbsfleet bowl, animal bones and a pear-shaped stone as well as a further two inhumations, each placed within smaller oval pits cut into the floor of the grave pit (Figure 3.2; Warrilow *et al* 1986: 64). Burial 1 at

Trelystan II, Powys, dated to 3331-2875 cal BC (4350±70 BP, CAR-282), contained a cremation burial with a single-edge flint knife and two pieces of worked flint, found under the probable remains of an inhumation in a wooden coffin (Britnell 1982: 137).

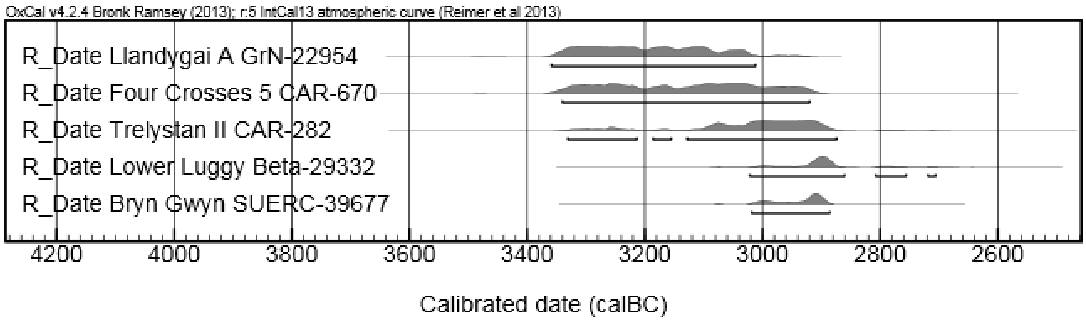

Figure 3.2: Calibrated radiocarbon dates for Middle Neolithic pit graves.

Three Middle Neolithic single pit graves contained only cremation burials. This includes deposit A252 at Llandygai A, Gwynedd, dated to 3359-3013 cal BC (4480±50 BP, GrN-22954), found at the top of a large oval pit (FA370) (Lynch and Musson 2001: 118). The fill of the pit also contained two sherds of Peterborough Ware pottery which were interpreted as accidental inclusions (Lynch and Musson 2001: 46). At Bryn Gwyn, Anglesey, a cremation burial, dated to 3019-2886 cal BC (4315±35 BP, SUERC-39677), had been deposited in a 0.5m wide circular pit (pit 138) (Smith 2012: 27). Pit 138 was part of an arc of three pits (131, 136 and 138) which had probably held timber posts (Smith 2012: 27). At Lower Luggy, Powys, a cremation burial dated to 3022-2706 cal BC (4280±45 BP, Beta-29332) was found in a pit (5090) inside a sub-rectangular enclosure (Gibson 2006: 177). The cremation burial is later in date than the enclosure ditch which was probably built between 3650-3370 cal BC (4760±50 BP, Beta-177037; 4690±40 BP, Beta-206282: Gibson 2006: 178).

The pit graves at Four Crosses 5, Trelystan II, Bryn Gwyn and Llandygai A represented the earliest phase of activity at these sites. A 16m wide stone circle was erected at Bryn Gwyn, probably after the removal of the timber posts, at the start of the third millennium BC (Smith 2012: 34) (section 3.2.2). At Four Crosses 5, a second inhumation burial (Phase 2 grave) was placed in a pit next to the Phase 1 burial pit (Warrilow *et al* 1986: 66). The V-perforated jet button associated with the Phase 2 grave dates to a period *c.* 2200-1900 cal BC (Shepherd 2009: 340, Sheridan and Davis 1998: 155-156). At Trelystan II, a cremation burial with a Food Vessel in a central pit (burial 2), located about 2.5m NE of burial 1, was covered by a turf barrow after 2126-1693 cal BC (3550±70 BP, CAR-390), and a further two cremation burials (burial 3 and 4) were inserted into the enlarged barrow, one of which (burial 3) dates to 2113-1697 cal BC (3550±60 BP, CAR-283) (Britnell 1982: 158, 160). At Llandygai A, a *c.* 70m wide henge with an external ditch was subsequently constructed, probably in the third millennium BC (section 3.1.4).

The Middle Neolithic tradition of pit graves stands in sharp contrast to the communal burials in Early Neolithic megalithic tombs, the majority of which were in use between the 40^{th} and 37^{th} centuries cal BC (Burrow 2003: 36-38, Kytmannow 2008). However, later bone deposits have been identified in some of these monuments, as in the southwest chamber at Parc le Breos Cwm, Glamorgan (3339-2926 cal BC, 4445±60 BP, OxA-6489: Whittle and Wysocki 1998: 148) and in the west lateral grave chamber at Sale's Lot, Gloucestershire (3346-3026 cal BC, 4476±39 BP, Wk-17190: Smith and Brickley 2009: 347). Furthermore, a pit with Impressed Ware sherds associated with the final closure of the chamber 2 passage at Gwernvale, Powys, dated to 3335-2893 cal BC (3335-2893 cal BC, 4390±70 BP, CAR-114: Britnell and Savory 1984: 88). This implies that the tradition of pit graves which emerged in the mid-fourth millennium BC overlapped with the later phases of activity at several Early Neolithic burial monuments.

3.1.2 Meusydd I timber circle

The end of the fourth millennium BC is associated with the development of the first circular enclosures in Wales (Figure 3.3 for a summary of radiocarbon dates). This includes the Meusydd I timber circle in Powys which consisted of a 7.2m wide circular enclosure formed by a single circle of six wooden posts (Jones 2009: 48-50). A cremation burial, dated to 3017-2762 cal BC (4280±40 BP, Beta-249072), had been placed against the side of a post (posthole 19) when the timber circle was erected. Another 10.5m wide timber circle (Meusydd

II) was also identified about 110m south of Meusydd I, although nothing was found in the excavation to date the structure (Jones 2009: 50-51).

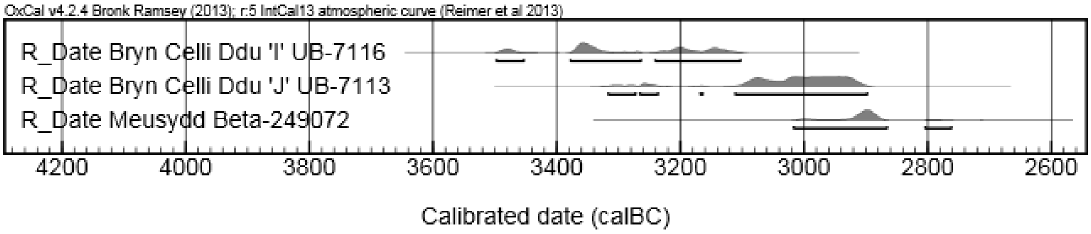

Figure 3.3: Calibrated radiocarbon dates for Middle Neolithic circular enclosures.

3.1.3 Bryn Celli Ddu stone arc

Stone circles are a notoriously difficult type of monument to date as the charcoal samples and artefactual evidence found within the stoneholes or associated with the monument may represent residual material. In many cases (Burl 2000: 376-377) this material helps to identify phases of activity, but does not provide dates for the construction of the stone circles themselves (Gibson 2010a: 52). Perhaps one of the earliest examples in Wales is the *c.* 20m wide stone arc at Bryn Celli Ddu (Burrow 2010a, Hemp 1930). Token cremation deposits placed at the base of stonehole I and in a hollow near stone J in the stone arc dated to 3498-3103 cal BC (4573±40 BP, UB-7116) and 3317-2898 cal BC (4384±46 BP, UB-7113) (Burrow 2010a: 256). The Bayesian model for Bryn Celli Ddu suggests that the stone arc dates to a period between *c.* 3200-3000 BC (Figure 3.9). Three of the stones from this arc (stones I, H and G) were probably used as reference points in the construction of the passage grave, probably in the 31st-30th centuries cal BC (section 3.2.4), to orientate the orthostatic chamber and passage along the winter/summer solstice alignments (Burrow 2010a: 260, 262).

3.1.4 'Formative' henges

Another type of monument which has been suggested to appear in the late fourth millennium BC (*c.* 3350-2900 BC) is the formative henge (Burrow 2010b: 184, Harding 2003: 13). Formative henges are defined as large circular enclosures between 80-107m in diameter with an inner bank and outer ditch, and possibly with narrow entrances (Burrow 2010b: 184).

Burrow (2010b: 186) identified fourteen formative henges in Wales, four of which have been excavated: Llandygai A, Gwynedd (Lynch and Musson 2001), Castell Bryn Gwyn, Anglesey (Wainwright 1962), Ysceifiog, Flintshire (Fox 1926b), and Walton Court, Powys (Jones 2010). However, there are many issues in terms of the chronology of these circular enclosures. All but two (GrN-22954 and GrA-22794) of the radiocarbon dates from the Llandygai A henge (Figure 3.4) were obtained from samples of oak or mixed charcoal which potentially suffers from the 'old wood' effect (section 3.4.3). This includes the mature oak charcoal sample, dated to 3518-2681 cal BC (4420±140 BP, NPL-221), associated with sherds of Fengate pottery in the secondary ditch silts (layer 4) – both of which could also derive from earlier activity at the site (Gibson 2012a: 14) – as well as the dates associated with the pit circle which span from the 36th-29th centuries cal BC (Lynch and Musson 2001: 118-119). The location of pit FA370, which contained a cremation burial dated to 3359-3013 cal BC (4480±50 BP, GrN-22954), slightly south of the axis of the henge and close to the inner henge bank, was interpreted as to indicate that this deposit was associated with the construction of the henge (Lynch and Musson 2001: 45). However, as there is no stratigraphical relationship between these two features, it is difficult to assume that pit FA370 and the henge construction were contemporaneous. It is only possible at this point to suggest that the Llandygai A henge was built some time between the deposition of burial A252 in pit FA370 and of burial A13, probably in the third millennium BC (Gibson 2012a: 14).

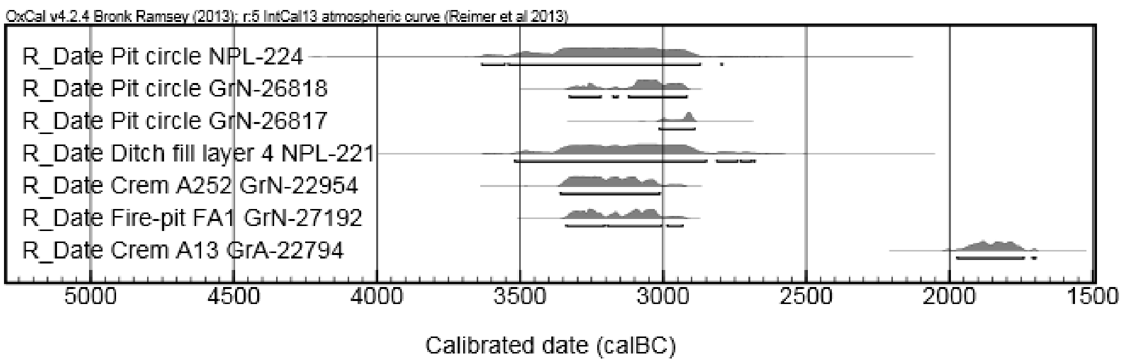

Figure 3.4: Calibrated radiocarbon dates for the Llandygai A henge, Gwynedd (Crem = cremation).

For the Castell Bryn Gwyn henge, Burrow (2010b: 186) argued that the presence of Peterborough Ware pottery from inner cobbled areas inside the enclosure and above the footings of the banks suggests a construction date for the henge between 3400-2500 BC. However, it is equally plausible that the Peterborough Ware (Fengate) sherds may represent residual material from an earlier phase of activity. At Dyffryn Lane I, Powys, the construction of the henge, probably around the 26^{th}-25^{th} centuries cal BC, was found to post-date an earlier phase of activity (represented by Impressed Ware pits) by several centuries (section 3.2.2; Gibson 2010b). Despite the complex stratigraphy of the Castell Bryn Gwyn henge, the small bronze awl found sealed beneath the primary bank provides a *Terminus Post Quem* for the henge construction in the Early Bronze Age period (Lynch 1991: 102, Wainwright 1962: 53).

Musson (1994: 23) suggested that the inhumation burial at Ysceifiog represented a Middle Neolithic pit grave similar to the ones found at Four Crosses 5 and Trelystan II. Burrow (2010b: 190) argued that the 88-101m wide sub-circular enclosure which encircles this burial represented another example of a formative henge based on the assumption that both features were built contemporaneously. However, it is more probable that the inhumation burial from Ysceifiog is later in date, as the burial context for this deposit – extended inhumation in a pit covered by a round cairn – most closely resembles other Early Bronze Age inhumation graves (section 5.7). In the absence of any datable finds, or of a stratigraphical relationship between the central mound and enclosure, the Ysceifiog embanked enclosure remains undated. Its classification as a formative henge based solely on its 'atypical' nature remains speculative. This is supported by the fact that a fourth possible 'formative' henge, the nearly 100m wide enclosure Walton Court in Powys, described as atypical in terms of its size and irregular circumference, proved to have been built in the mid-third millennium BC (section 3.3.1; Jones 2010: 9).

There is at this point no evidence to support the idea that formative henges were built towards the end of the fourth or early third millennium BC in Wales. Only three circular embanked enclosures are dated: Dyffryn Lane I (Gibson 2010b) to the Late Neolithic period (section 3.2.3), Walton Court (Jones 2010) to the Chalcolithic period (section 3.3.1), and Castell Bryn Gwyn, probably to the Early Bronze Age period (see above). The examples discussed above serve to illustrate the limited amount of radiocarbon dates and contextual data available to date henge monuments and embanked enclosures in Wales. In many instances (Castell Bryn Gwyn, Dyffryn Lane I, Llandygai A and Llandygai B, discussed in section 3.4.3), the artefactual evidence and associated radiocarbon dates suggest that activity at these sites spanned over several centuries, although the chronological relationship between these phases of activity and the construction of the henges remains ambiguous.

3.2 Late Neolithic (*c.* 2900-2400 cal BC)

Few radiocarbon determinations fall within the Late Neolithic period in Wales. So far four types of monuments have returned Late Neolithic dates, which include the penannular ring ditch at Sarn-y-bryn-caled 2 in Powys (section 3.2.1), two stone circles, Bryn Gwyn in Anglesey and Dyffryn Lane I in Powys (section 3.2.2), a Class I henge at Dyffryn Lane I in Powys (section 3.2.3), and two passage graves, Bryn Celli Ddu and Barclodiad-y-Gawres in Anglesey (section 3.2.4).

3.2.1 Sarn-y-bryn-caled 2 penannular ditched enclosure

The Sarn-y-bryn-caled 2 monument in Powys consisted of an 8 x 7m wide penannular ring ditch, possibly associated with an external bank (Gibson 1994: 159). Two substantial oak posts had also been erected at the entrance of the enclosure. Four deposits of cremated human bones were deposited in the ditch: a primary cremation placed on the ditch base and a further three deposits subsequently inserted when the ditch was recut. The primary deposit (cremation 1) dated to 3013-2888 cal BC (4315±30 BP, SUERC-24176), and two of the secondary deposits (cremations 2 and 3) to 2918-2861 cal BC (4255±30 BP, SUERC-24172) and 2875-2624 cal BC (4145±30 BP, SUERC-24171) (Figure 3.5; Gibson 2010c: 354). Other finds associated with the enclosure include sherds of Impressed Ware from the basal silts of the ditch and from the fill of the ditch recut (Gibson 1994: 159). Another similar monument is the 8m wide penannular ring ditch at Llandygai E, Gwynedd, although this site remains undated (Lynch and Musson 2001: 83-86). No finds were found to be associated with the monument, except for two unworked stone flakes (Lynch and Musson 2001: 86).

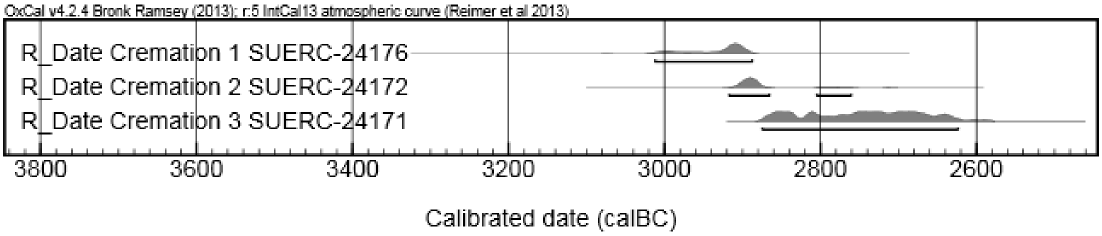

Figure 3.5: Calibrated radiocarbon dates for the Sarn-y-bryn-caled 2 penannular ditched enclosure, Powys.

3.2.2 Stone circles: Bryn Gwyn and Dyffryn Lane I

Two stone circles in Wales have returned Late Neolithic radiocarbon determinations (Figure 3.6). The first phase of activity at Bryn Gwyn, Anglesey, involved the deposition of a cremation burial in a pit (pit 138) in the 31st-29th centuries BC (section 3.1.1; Smith 2012: 27). Pit 138 was part of an arc of three pits (131, 136 and 138) which had probably held timber posts. Hazel charcoal from the upper fill of pit/post-hole 131, probably slumped in material from a spread of charcoal-rich soil (layer 111), dated to 2891-2637 cal BC (4185±35 BP, SUERC-39678). As this charcoal-rich layer partially overlaid pit 159 (a stone-robbed pit), this date provides a *Terminus Ante Quem* for the erection of the stone in pit 159 which formed part of the 16m wide stone circle (Smith 2012: 34). A sherd from a Late Collared Urn in the uppermost fill of pit 138 and a radiocarbon date of 1762-1562 cal BC (3380±35 BP, SUERC-39679) from the packing material of the standing stone in pit 6 inside the stone circle suggest a later phase of activity around a millennium after the construction of the stone circle (Smith 2012: 34).

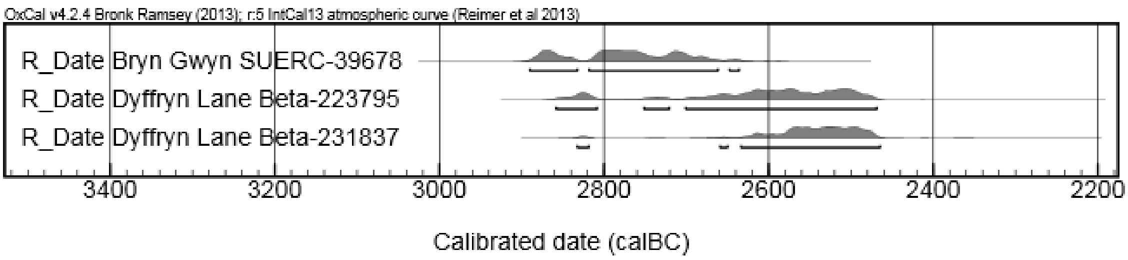

Figure 3.6: Calibrated radiocarbon dates for Late Neolithic stone circles.

Another example of an early third millennium BC stone circle is Dyffryn Lane I, Powys (Gibson 2010b). Charcoal from short-lived species which overlaid the stoneholes of stones 18 and 19 provided a *Terminus Ante Quem* of between *c.* 2900-2500 cal BC (4050±50 BP, Beta-223795; 4020±40 BP, Beta-231837) for the construction of the 11m wide circle (Gibson 2010b: 227). The construction of the stone circle post-dated an earlier phase of activity at the site, represented by pits with Peterborough Ware sherds, carbonised hazelnuts and charcoal, by between 100-500 years (Gibson 2010b: 229).

3.2.3 Dyffryn Lane I henge

Hazel charcoal from a hearth on the pre-bank soil provided a *Terminus Post Quem* of between *c.* 2700-2400 cal BC for the construction of the *c.* 85m wide circular bank at Dyffryn Lane I, Powys (4000±50 BP, Beta-223792; 3980±40 BP, Beta-231249) (Figure 3.7; Gibson 2010b: 225, 230). The Dyffryn Lane I henge represents a Class I henge, with a large 6.5m wide and 2.1m deep circular ditch and external bank, and with a single entrance on the NW side (Gibson 2010b: 223). The henge was probably constructed a minimum of two centuries after the 11m wide stone circle had been built (section 3.2.2), at a time when the stone circle had become dilapidated (Gibson 2010b: 232).

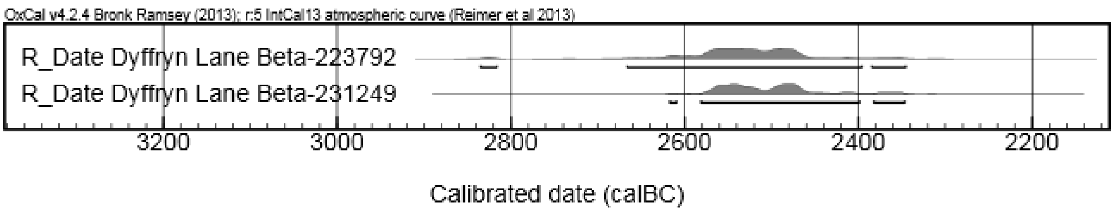

Figure 3.7: Calibrated radiocarbon dates for the construction of the Dyffryn Lane I henge, Powys.

3.2.4 Passage graves: Bryn Celli Ddu and Barclodiad-y-Gawres

Another type of funerary monument which dates to the Late Neolithic period is the passage grave, of which the only two known examples in Wales, Bryn Celli Ddu and Barclodiad-y-Gawres, are located on Anglesey (Figure 3.8). Passage graves are a type of funerary monument most commonly found in Ireland, with isolated examples also found in Merseyside and Orkney (Cooney 2000: 112ff, Darvill 2010: 162).

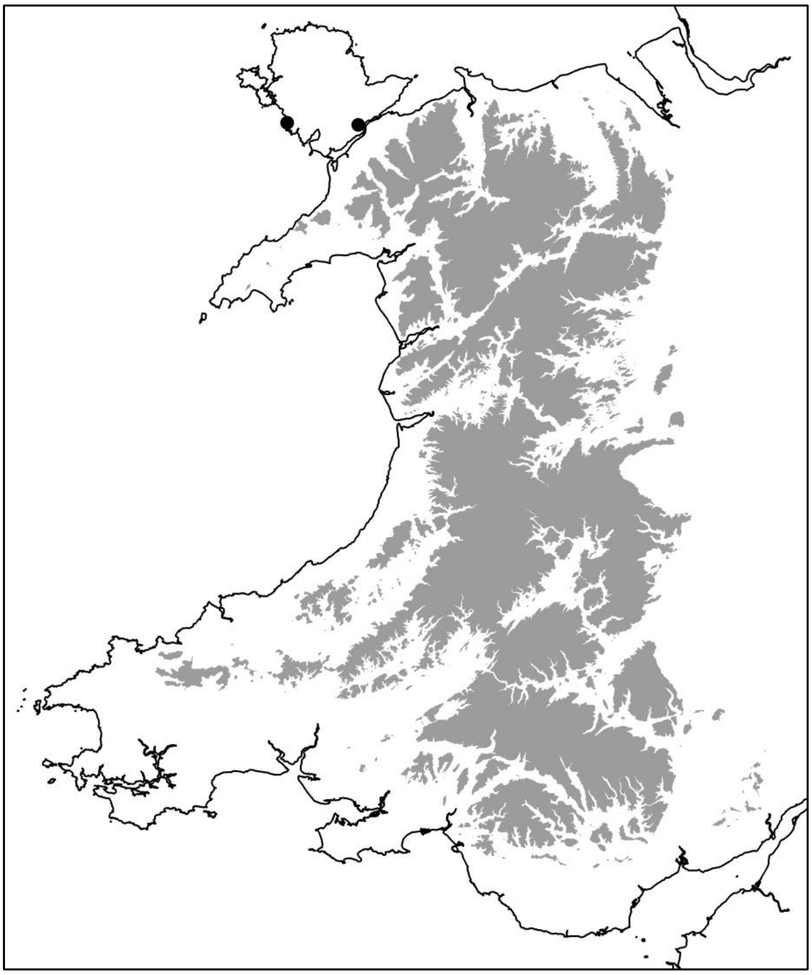

Figure 3.8: Distribution of passage graves in Wales (land above 230m shaded).

The recent radiocarbon dating program by Burrow (2010a) helped to define the sequence of events at Bryn Celli Ddu (Figure 3.9; Burrow 2010a: 257). Pre-monument activity at the site included the deposition of small, token deposits of cremated bones at *c.* 3200-3000 cal BC (4384±46 BP, UB-7113 and 4573±40 BP, UB-7116) in a central pit and in the stoneholes of a *c.* 20m wide stone arc (section 3.1.3). A passage grave was subsequently constructed over these features, probably between *c.* 3074-2956 cal BC (Figure 3.9). The dates for the cremation deposits associated with the passage and outer kerb (4409±39 BP, UB-7114; 4360±44 BP, UB-7115; 4395±40 BP, UB-7117 and 4351±35 BP, UB-7118) suggest that the monument was used between *c.* 3050-2900 cal BC (Figure 3.7). These dates are comparable to the ones from Irish passage graves such as Knowth and Newgrange which were constructed towards the end of the fourth millennium BC (Waddell 2000: 57-65). Although no radiocarbon dates are available, the passage grave at Barclodiad-y-Gawres most probably dates from around the same period based on similarities in architectural features, burial practices and artefactual evidence, such as an antler pin similar in style to examples found in Irish passage graves (Burrow 2003: 39).

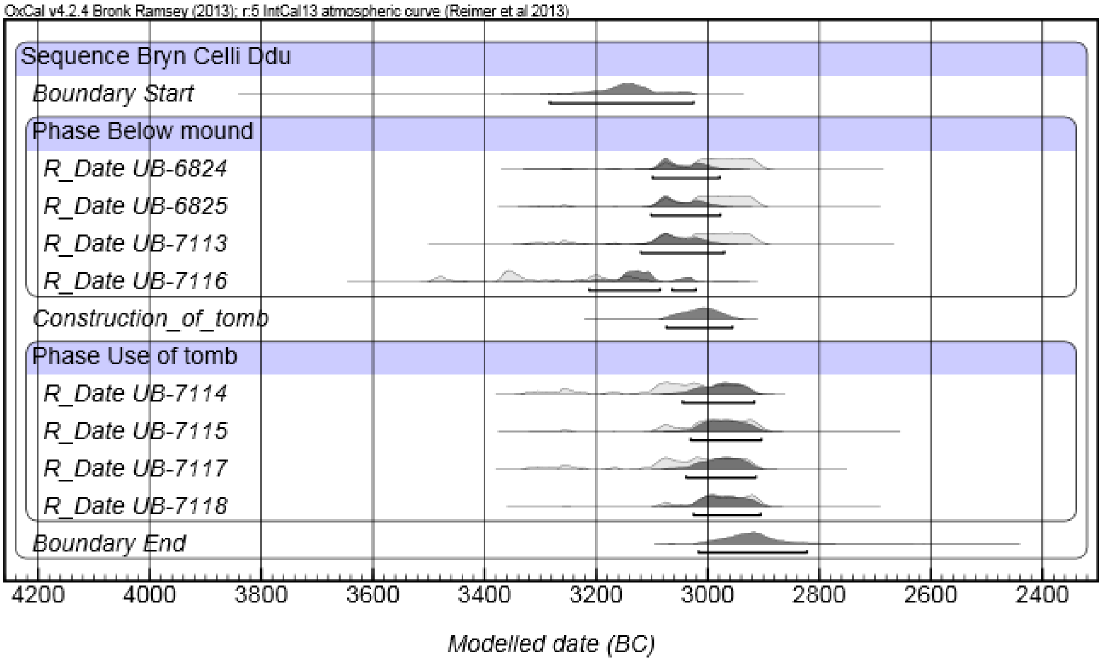

Figure 3.9: Modelled radiocarbon dates for Bryn Celli Ddu, Anglesey (Modified from Burrow 2010a: 257).

3.3 Chalcolithic (*c.* 2500-2200 BC)

The radiocarbon-based evidence for funerary and ritual monuments from the Chalcolithic period in Wales is limited. Only one radiocarbon date is available for the construction of a monument in this period, the Walton Court ditched enclosure in Powys (section 3.3.1). The Chalcolithic period is also associated with the appearance of a new form of burial practice, the Beaker burial, although few examples have been identified in Wales (section 3.3.2).

3.3.1 Walton Court ditched enclosure

The Walton Court enclosure in Powys consists of a 98m wide circular ditch around 2m wide and 1.4m deep (Jones 2010: 2, 6). Hazel charcoal from the secondary ditch fill suggests that the monument had been constructed probably shortly before 2569-2308 cal BC (3945±35 BP, SUERC-26430) (Jones 2010: 9-10).

3.3.2 'Pre-fission' Beaker burials

The tradition of Beaker burials first appeared around the mid-third millennium BC in Britain (Needham 2005: 182). The key type of pottery vessel for this period is the Low-Carinated (LC) Beaker, which is thought to resemble examples of ceramic forms from northern France and the Low Countries (Needham 2005: 178, 182). Grave good associations in 'pre-fission' (*c.* 2500-2250 cal BC) Beaker burials in Britain were similar to examples from the Continent, which included, in addition to the LC Beaker, tanged copper daggers/knives, gold ornaments, stone wristguards and lithic barbed-and-tanged arrowheads (the 'primary package' of grave goods) (Needham 2005: 176).

Beaker burials from the 'pre-fission' phase remained relatively rare in Britain (Needham 2005: 209). Only three Beaker burials probably belong to the 'pre-fission' phase in Wales: Llantrithyd (Cardiff Archaeological Society 1977: 10) and Sutton 268' (Fox 1943) in Glamorgan, and Penderyn (Savory 1980: 138) in southern Powys. Although none of these burials are associated with radiocarbon dates, the types of associated artefacts found with the deposits are probably part of the pre-fission 'primary package' of grave goods (Needham 2005: 205). This includes the LC Beaker with Maritime-derived (MD) decoration, seven barbed-and-tanged arrowheads and chert scraper placed around the crouched inhumation inside a rectangular setting of stones at the bottom of a large oval pit at Sutton 268' (Fox 1943: 93-94). The grave had been covered by a small cairn (subsequently disturbed when secondary burials were inserted in the Early Bronze Age period) and surrounded by an 8m wide circular ditch with two causeways made up of piled stones (Fox 1943: 94-95). The LC Beaker with MD decoration and stone spindle-whorl from Penderyn probably accompanied a destroyed inhumation burial (Savory 1980: 138). Another possible early Beaker burial is Llantrithyd (Cardiff Archaeological Society 1977: 10), as the jade wristguard which accompanied the inhumation burial is typochronologically early within the sequence of Beaker grave goods (Needham 2005: 205). The artefactual evidence so far suggests that the tradition of Beaker burials did not become established in Wales until the Early Bronze Age period, around and after the 23rd century BC (section 3.4.1.1).

3.4 Early Bronze Age (*c.* 2200-1700 BC)

Of the five chronological periods examined in this study, the Early Bronze Age is associated with the greatest number and widest range of funerary and ritual monuments. This includes burial mounds (round barrows and burial cairns) (section 3.4.1), cremation cemeteries (section 3.4.2), and circular enclosures, such as henges, timber circles, stone circles and pit circles (section 3.4.3).

3.4.1 Burial mounds: round barrows and burial cairns

Burial mounds are the most common type of Bronze Age monument, with 1833 burial cairns and 1080 round barrows so far identified in Wales. Both these monument types are distributed throughout Wales, although burial cairns are predominantly located in upland regions (Figure 3.10) and round barrows in lowland areas, or on the edge of upland areas (Figure 3.11).

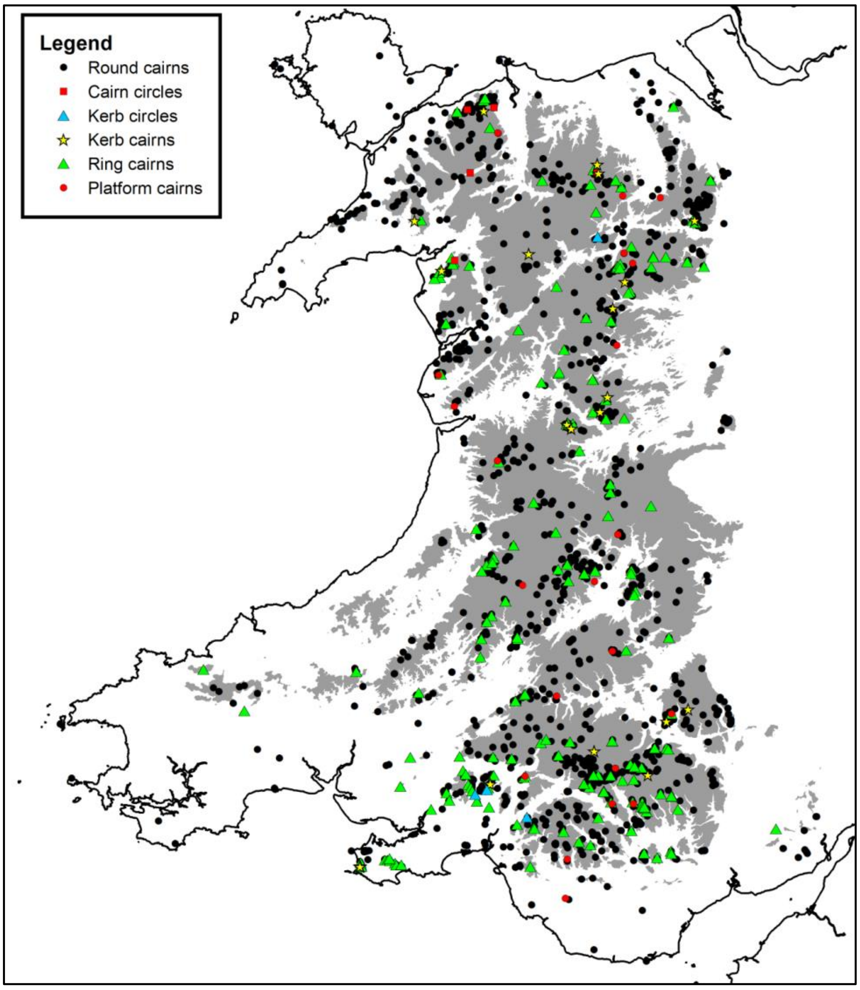

Figure 3.10: Distribution of burial cairns (round cairns, cairn circles, kerb circles, kerb cairns, ring cairns and platform cairns) in Wales (land above 230m shaded).

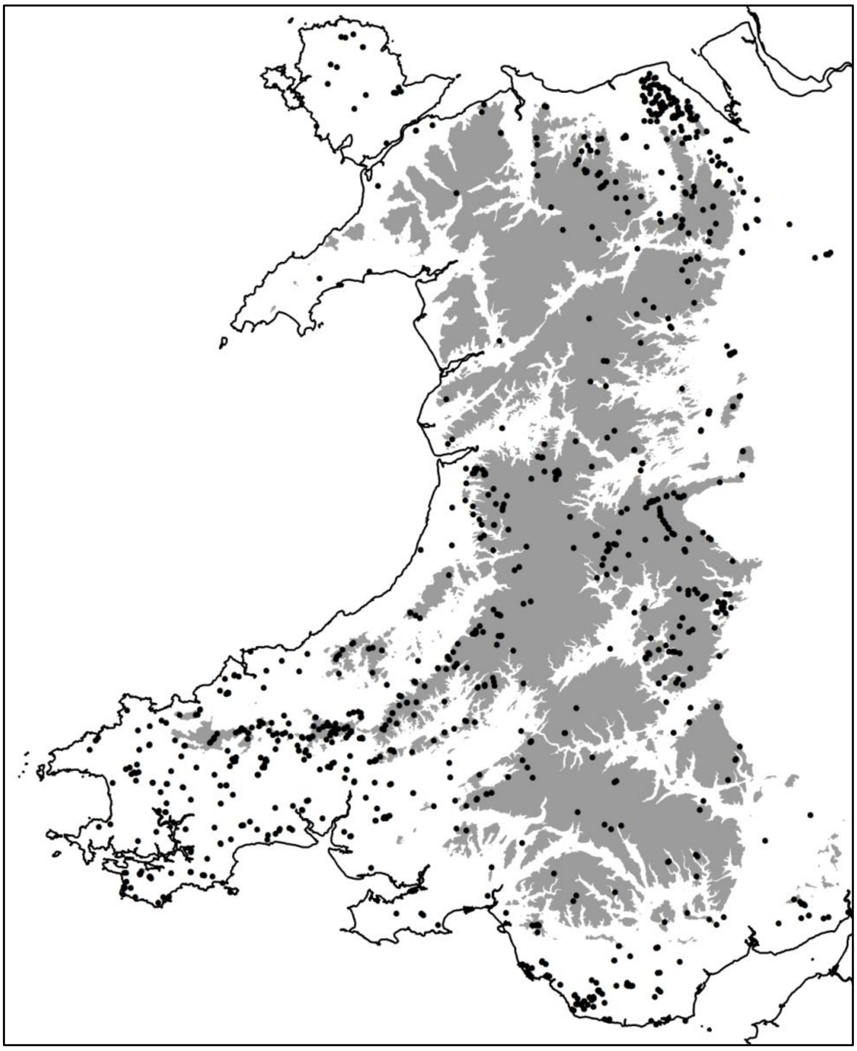

Figure 3.11: Distribution of round barrows in Wales (land above 230m shaded) (NB round barrows recorded in upland areas most probably represent turf-covered round cairns).

The following sub-sections provide a summary of radiocarbon dates from excavated burial mounds. Two main types of human bone deposits have been identified for the Early Bronze Age period, inhumations (section 3.4.1.1) and cremation deposits (section 3.4.1.2). Bayesian models created for Early Bronze Age burial mounds are discussed in section 3.4.1.3.

3.4.1.1 Inhumation burials

The radiocarbon-based evidence for Early Bronze Age inhumations from burial mounds in Wales is limited. Only 10 of the 112 inhumation burials are associated with radiocarbon dates (Appendix F), six of which represent Beaker burials (Figure 3.12). Three dates were obtained from charred material in the fill of the grave pit at Llanelwedd Rocks 2, Powys, which span from 2195-1939 cal

BC (3680±35 BP, SUERC-24766; 3670±35 BP, SUERC-24769; 3670±40 BP, SUERC-290090) (Britnell 2013: 219). The central rock-cut grave pit probably held an inhumation burial accompanied by a Beaker, flints (barbed-and-tanged arrowheads, flakes, core and chip) and a possible copper-alloy bracelet (Britnell 2013: 160-165). At Tandderwen, Powys, charcoal from a wooden coffin, which had probably held an inhumation associated with a Weak-Carinated (WC) Beaker and a flint knife, dated to 2195-1767 cal BC (3610±70 BP, CAR-1193) (Brassil *et al* 1991: 72). Charcoal from the base of pit 1 at Ysgwennant, Powys, which probably contained an inhumation burial with a Long-Necked (LN) Beaker, returned a date of 1936-1528 cal BC (3423±82 BP, Birm-85) (Day and Savory 1972: 28). At Welsh St Donats 3, Glamorgan, oak charcoal from a wooden coffin associated with inhumation burial C, accompanied by a LN Beaker, a copper-alloy awl, a flint flake and an ox tooth, dated to 2109-1528 cal BC (3470±100 BP, BM-1681R) (Burrow and Williams 2008, Ehrenberg *et al* 1981: 814). Charcoal from the surface of the central D-shaped stone structure at Nant Maden, Glamorgan, which may have held an inhumation burial accompanied by a Beaker, dated to 2008-1695 cal BC (3518±51 BP, BM-1113: Burleigh and Hewson 1979: 344). The date obtained from human bone from the inhumation burial in a cist accompanied by a LN Beaker from Riversdale in Glamorgan (2830-2140 cal BC, OxA-3814) must be rejected as too early based on its association with a bronze awl (Burrow 2012: 176).

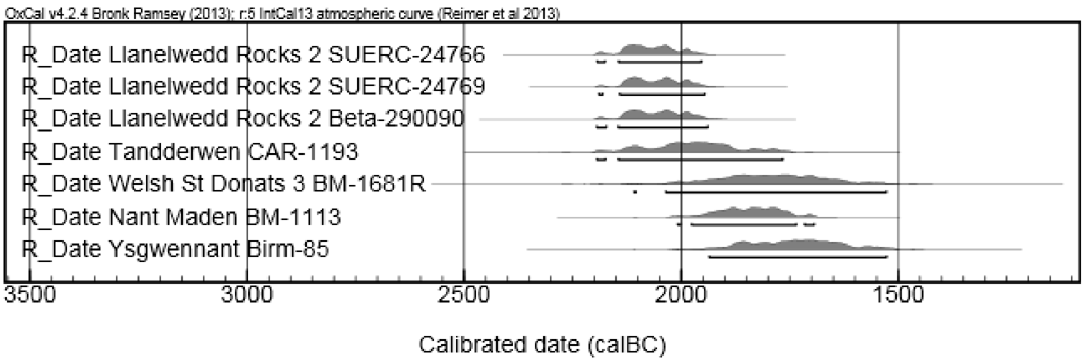

Figure 3.12: Calibrated radiocarbon dates for 'fission' and 'post-fission' Beaker burials (NB the Riversdale radiocarbon date, considered inaccurate, is not included).

Despite the limited number and poor precision of radiocarbon determinations associated with Welsh Beaker burials, these deposits most probably belong to the ‘fission’ or ‘post-fission’ horizons of Beaker burials. The ‘fission’ or ‘Beaker as instituted culture’ phase (between *c.* 2250-2150 cal BC, until 1950 cal BC), is defined as a period when Beaker cultural values, both in terms of material culture and burial practices, became increasingly popular in Britain (Needham 2005: 209, Sheridan 2007: 92). Radiocarbon dates certainly suggest a floruit of Beaker burials for this period (Needham 2005, Sheridan 2007, Sheridan *et al* 2007). Grave good associations with Beaker burials from the ‘fission horizon’ were more diversified than in the ‘pre-fission’ phase (Needham 2005: 205). This includes the development of new types of Beaker pottery, such as Long-Necked (LN), Short-Necked (SN) and S-Profile (SP) Beakers, and a more varied range of other associated artefacts, which include flint daggers, bronze flat daggers, stone sponge-fingers, and jet buttons and rings (the ‘emergent packages’ of grave goods) (Needham 2005: 205). The ‘post-fission’ or ‘Beaker as past reference’ phase, between *c.* 1950-1700/1600 cal BC, is associated with a decline in the number of Beaker burials, which also tended to be accompanied by more mundane grave goods (Needham 2005: 210). In this study 42 Beaker burials in Wales have been classified within the ‘fission’ and ‘post-fission’ horizons in the Early Bronze Age period based on the typochronology of grave good associations developed by Needham (2005: 205-206) (Appendix F).

Another type of Early Bronze Age deposit is the inhumation burial associated with Food Vessel pottery. Only two examples have so far been identified in Wales (Appendix F), which include the cist at Candleston Castle, Glamorgan, which probably contained an inhumation accompanied by a token deposit of cremated bones, a Bowl Food Vessel and a bronze flat riveted dagger (Ward 1919). The cremated bones dated to 2130-1881 cal BC (3630±35 BP, GrA-27615; 3605±35 BP, GrA-27614: Brindley 2007: 367). This matches the dates for Food Vessel inhumations elsewhere in Britain and Ireland, which span from *c.* 2150-1850 BC (Brindley 2007: 328-331, Fowler 2013: 138-143, Sheridan *et al* 2007, Wilkin 2013: 56-59). The second example is from Linney Burrows, Pembrokeshire, where a crouched inhumation in a cist was associated with a Food Vessel Urn and two flint flakes (Gordon-Williams 1926).

Four radiocarbon dates are associated with aceramic inhumation burials (Figure 3.13). Human bone from the poorly preserved disarticulated inhumation (burial 3) from Pant-y-Butler 2, Ceredigion, dated to 2192-1952 cal BC (3675±35 BP, SUERC-36628) (Murphy and Murphy 2013: 44). A slightly later date was obtained for the disarticulated inhumation burial in a shallow scoop into a natural mound at Hendre, Flintshire, for which human bone was dated to 1900-1691 cal BC (3480±40 BP, BM-2922) (Brassil and Gibson 1999: 96). A similar date (1903-1533 cal BC, 3420±70 BP, CAR-666) was returned for a sample of oak charcoal from a postpipe in the fill of a probable inhumation pit at the Four Crosses 1 round barrow in Powys (Warrilow *et al* 1986: 56). The radiocarbon date (2561-2136 cal BC, 3860±70 BP, HAR-2187) for the oak wooden dug-out from Disgwylfa Fawr in Ceredigion, which had probably held an inhumation, is considered unreliable as the wood had previously been treated with paraffin wax (Green 1987: 48). A further 59 aceramic inhumations also probably date to the Early Bronze Age period (Appendix F). Eight of these burials also contained associated artefacts – such as flint knives, jet ornaments and bronze daggers – which on a typo-chronological basis probably date to the 23rd-19th centuries BC (Fowler 2013: 122-133, Shepherd 2009, Sheridan and Davis 1998). The remainder of inhumations were assigned to the Early Bronze Age period either due to the fact that other burials from the same mound were radiocarbon-dated to this period, or based on the artefactual evidence recovered from the excavated mound.

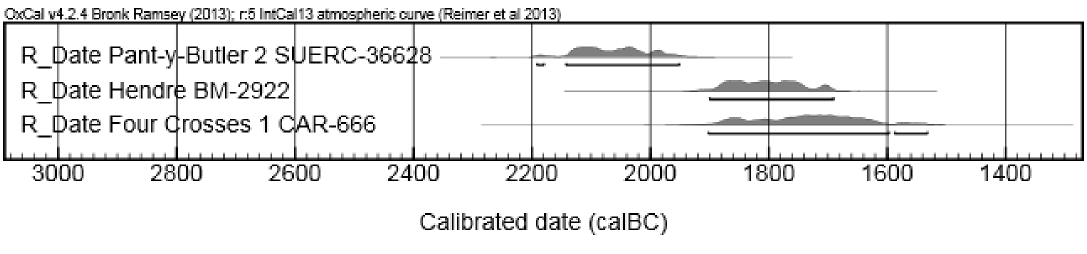

Figure 3.13: Calibrated radiocarbon dates for Early Bronze Age aceramic inhumations (NB the Disgwylfa Fawr radiocarbon date, considered inaccurate, is not included).

3.4.1.2 Cremation deposits

Seventy-one cremations from Bronze Age burial mounds are associated with radiocarbon dates, which span from between 2286-1295 cal BC (Figure 3.14). However, if only the most precise radiocarbon determinations are taken into account, which usually come from radiocarbon-dated cremated bones, a date span of *c.* 2200-1700 cal BC is obtained for cremation deposits. This suggests that the cremation burial became the dominant type of funerary deposit from the 23rd-22nd centuries cal BC in Wales.

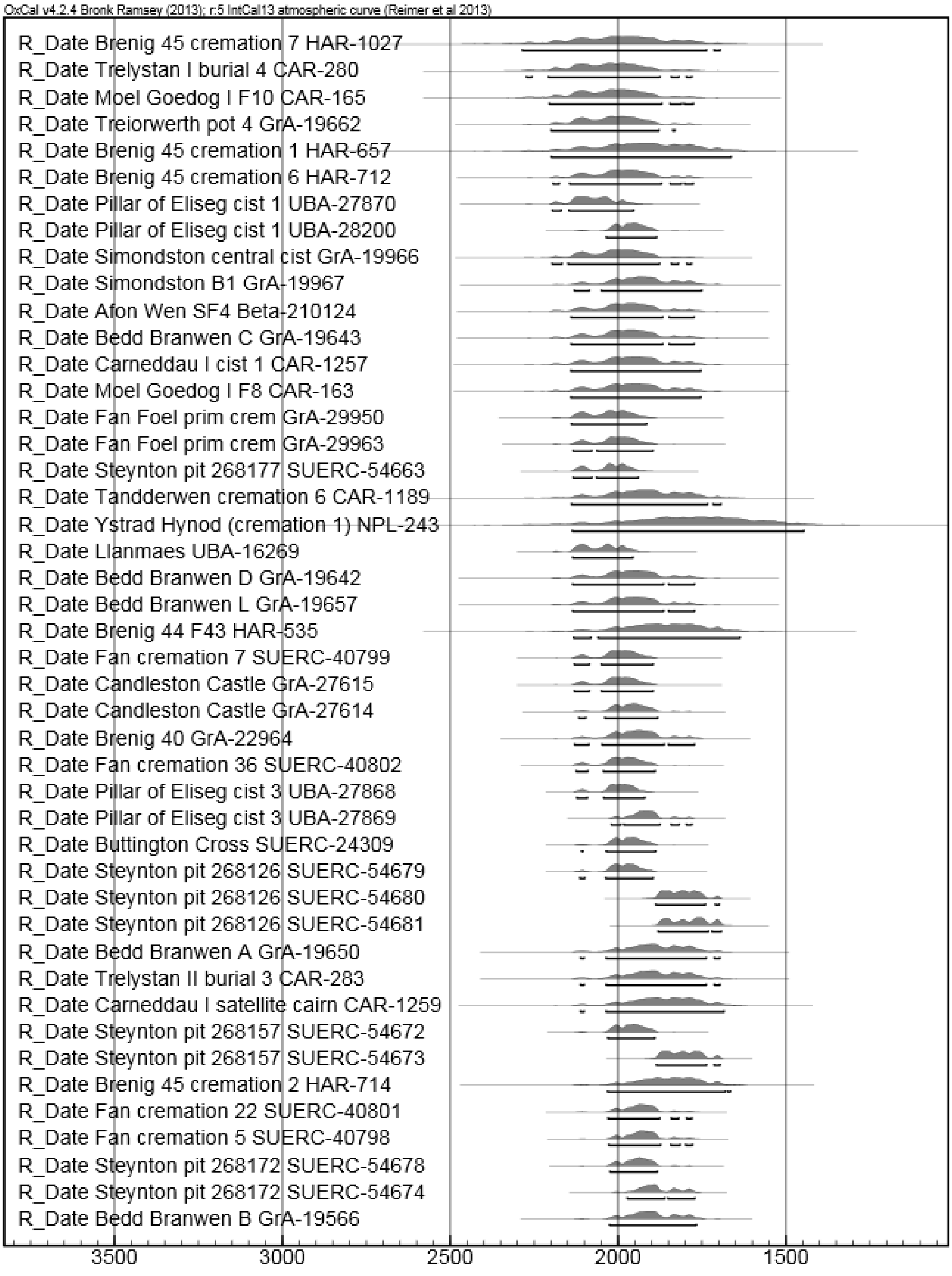

Figure 3.14: Calibrated radiocarbon dates for Early Bronze Age cremation deposits (NB radiocarbon dates considered inaccurate not included).

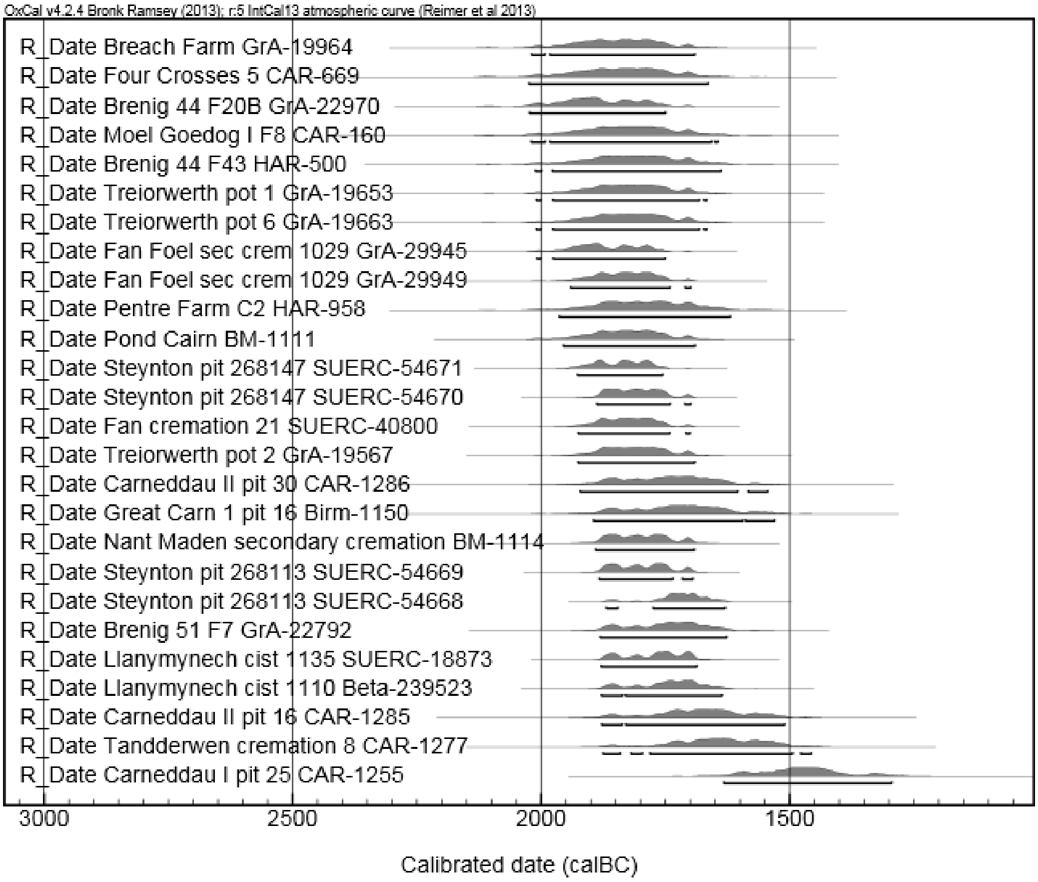

Figure 3.14 (cont'd): Calibrated radiocarbon dates for Early Bronze Age cremation deposits (NB radiocarbon dates considered inaccurate not included).

3.4.1.3 Modelled radiocarbon dates for Early Bronze Age burial mounds

Ten excavated burial mounds contained sufficient radiocarbon dates and stratigraphical data to develop Bayesian models: Carneddau I (Figure 3.15), Trelystan I (Figure 3.17), Bedd Branwen (Figure 3.19), Brenig 45 (Figure 3.21), Treiorwerth (Figure 3.23), Simondston (Figure 3.24), Pillar of Eliseg (Figure 3.26), Brenig 44 (Figure 3.27), Brenig 51 (Figure 3.29) and Moel Goedog I (Figure 3.31).

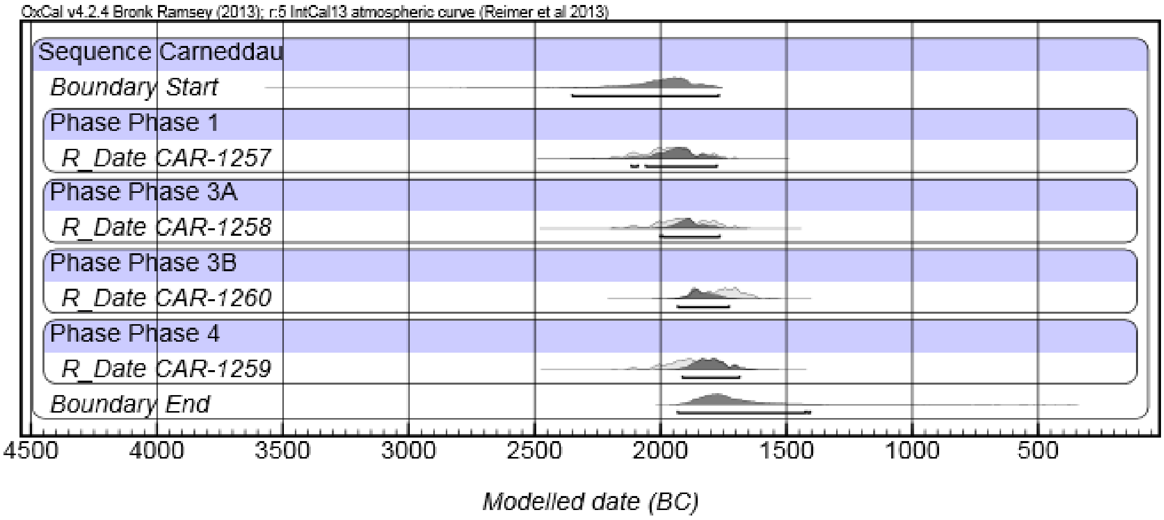

Figure 3.15: Modelled radiocarbon dates for the Carneddau I round cairn, Powys.

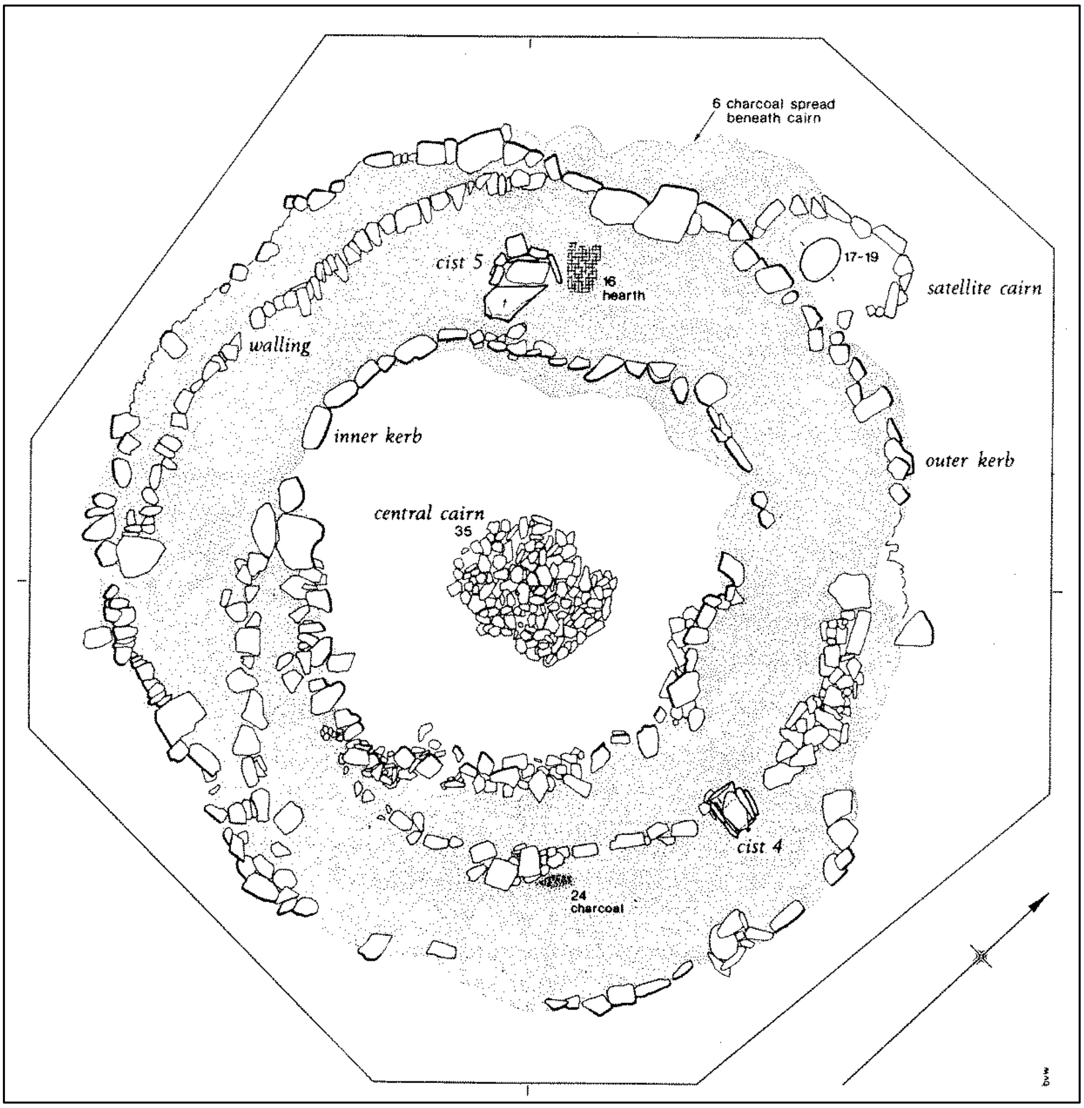

Figure 3.16: Plan of the main structures of Carneddau I round cairn, Powys (Taken from Gibson 1993b: 10).

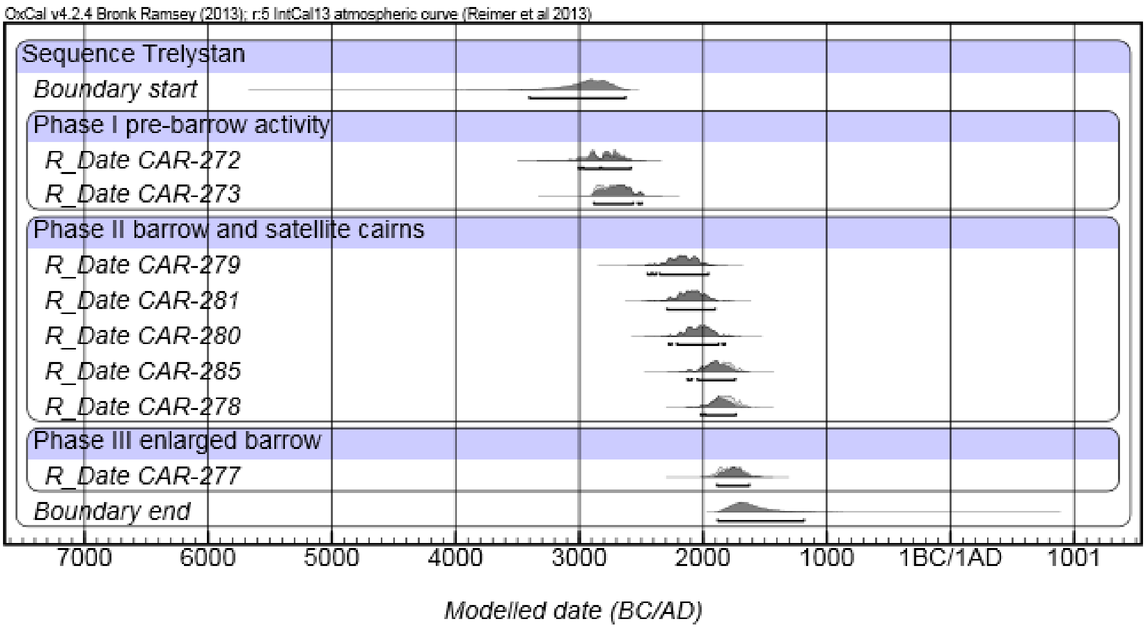

Figure 3.17: Modelled radiocarbon dates for the Trelystan I round barrow, Powys.

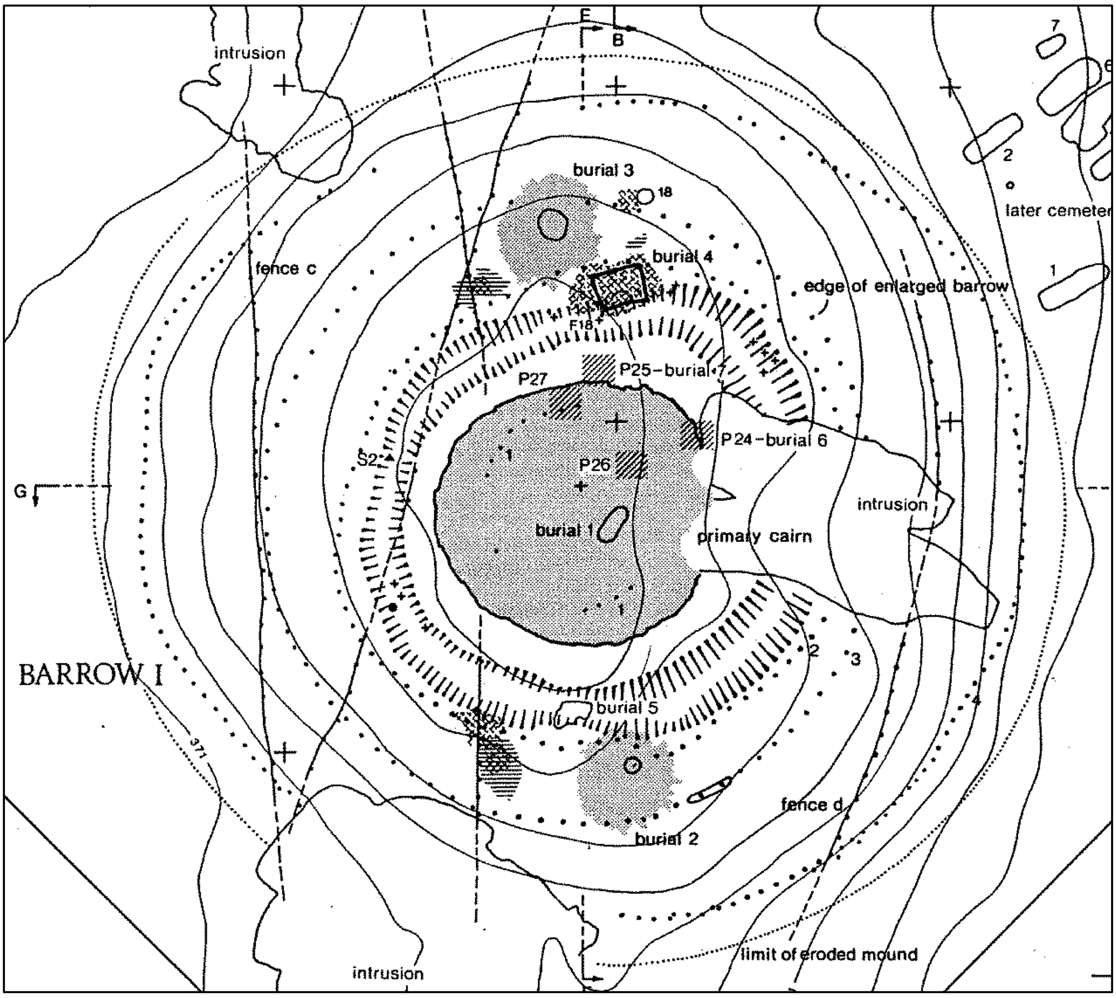

Figure 3.18: Plan of the Trelystan I round barrow, Powys (Taken from Britnell 1982: 147).

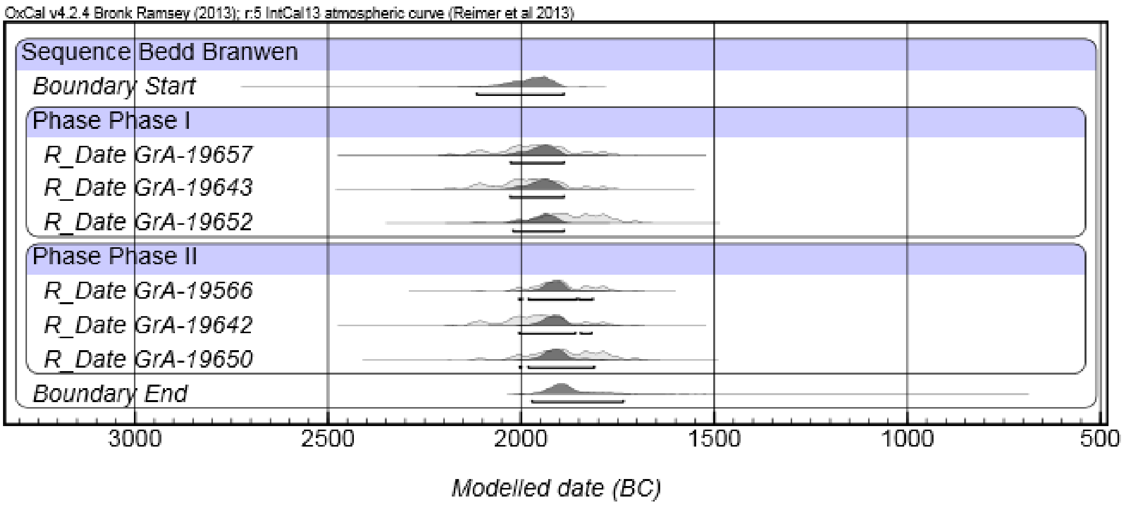

Figure 3.19: Modelled radiocarbon dates for the Bedd Branwen round barrow, Anglesey.

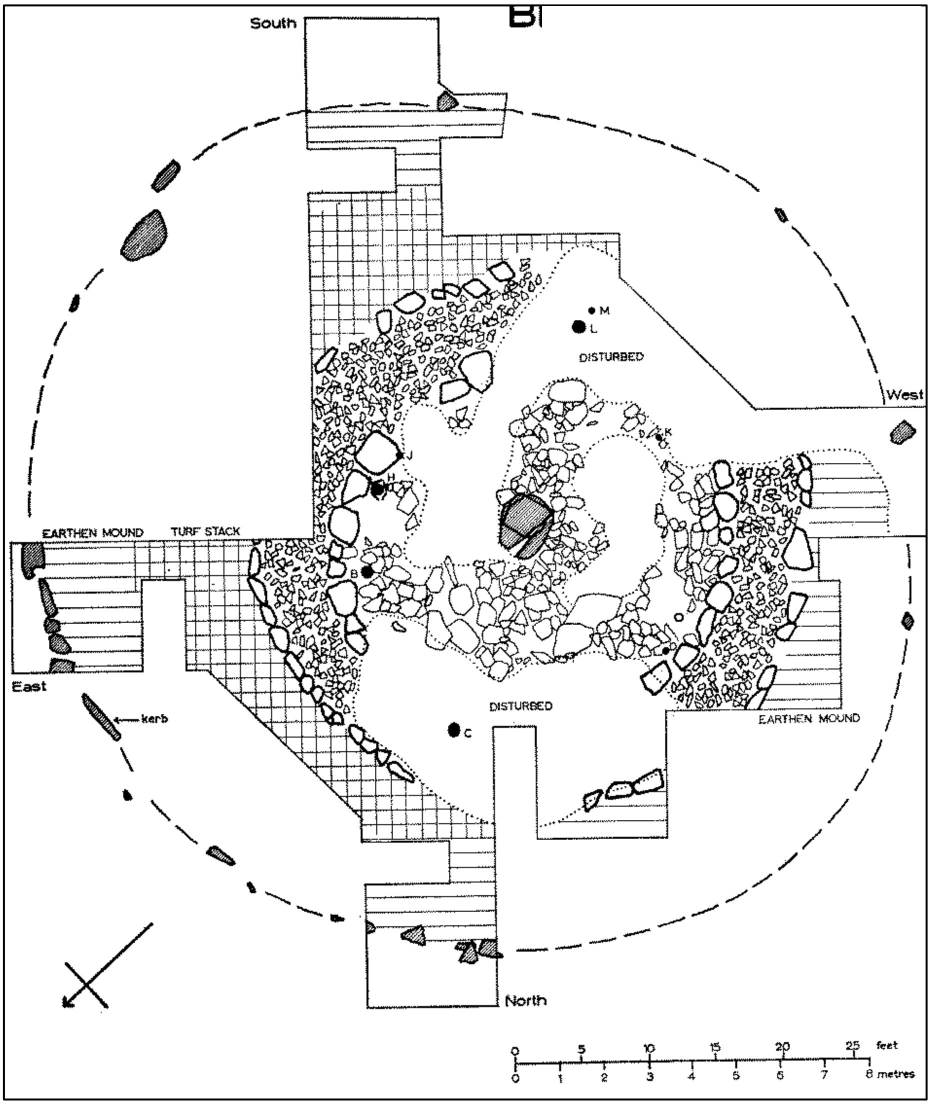

Figure 3.20: Plan of the Bedd Branwen round barrow, Anglesey (Taken from Lynch 1991: 160).

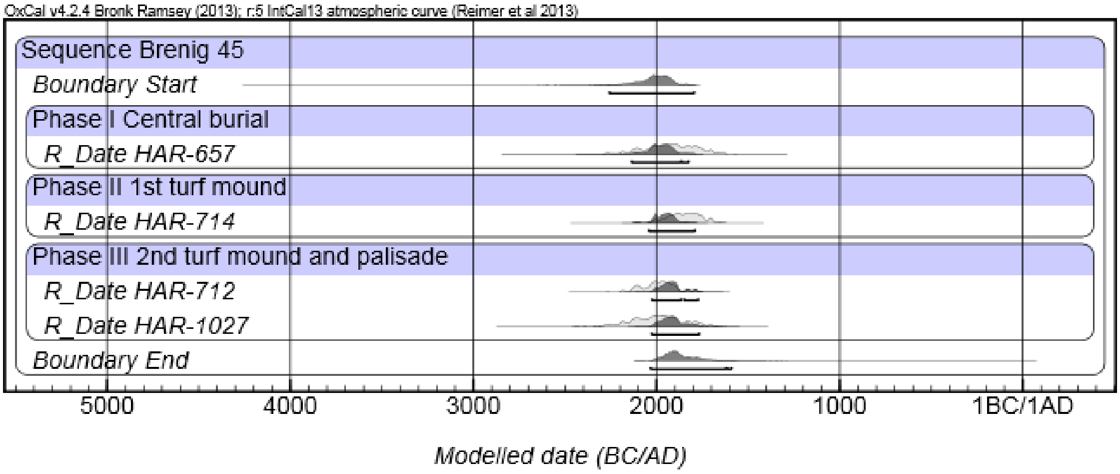

Figure 3.21: Modelled radiocarbon dates for the Brenig 45 round barrow, Denbighshire.

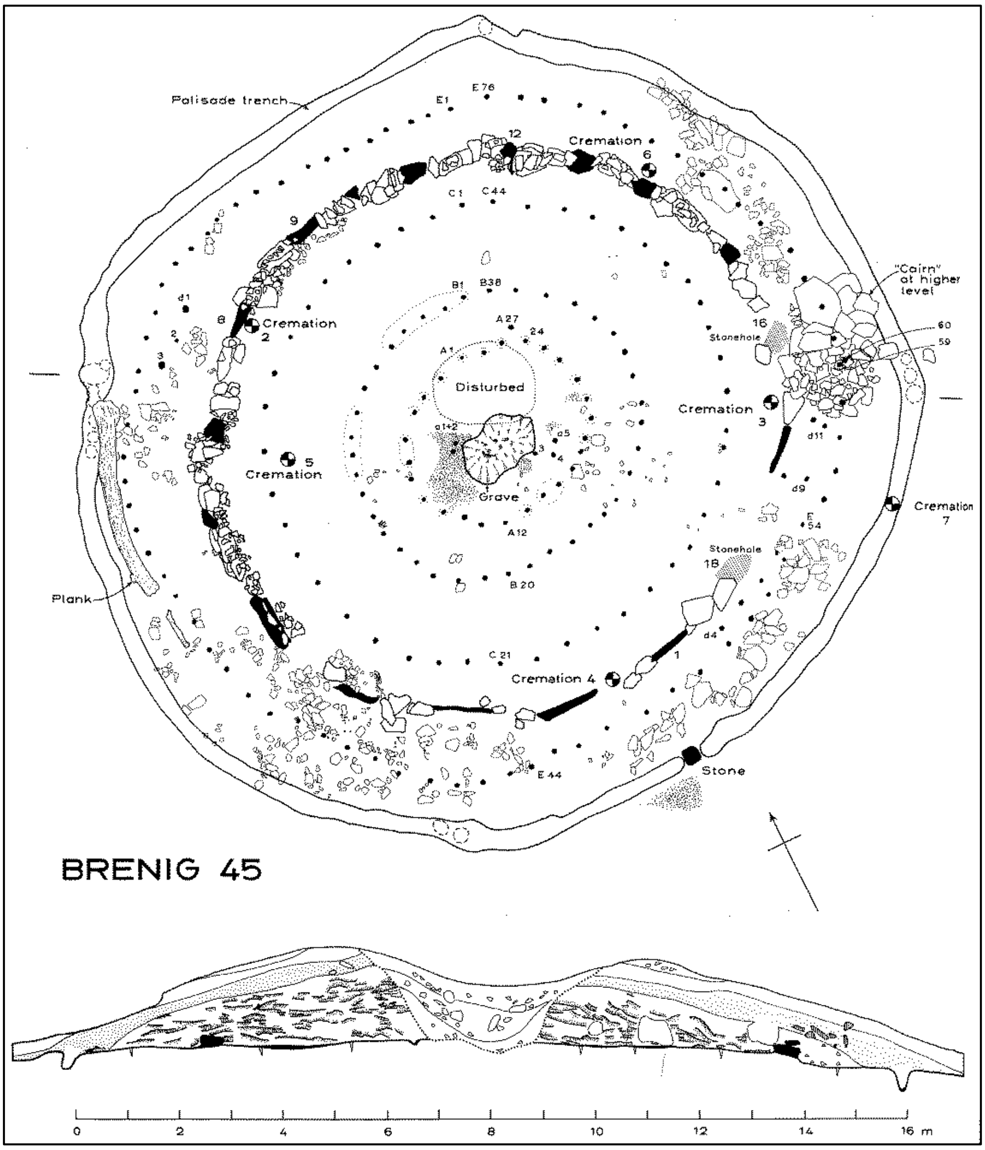

Figure 3.22: Plan and section of the Brenig 45 round barrow, Denbighshire (Taken from Lewis 1993: 66).

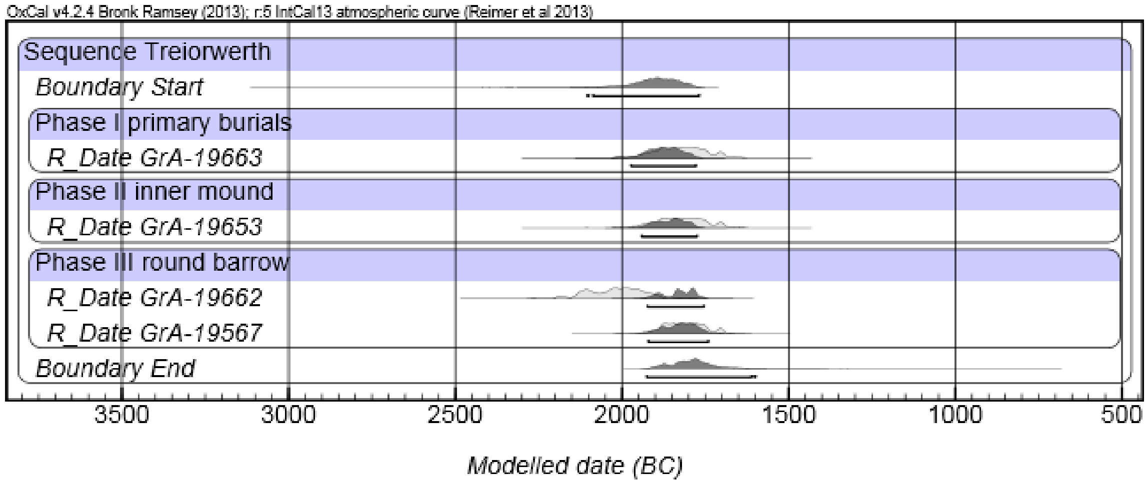

Figure 3.23: Modelled radiocarbon dates for the Treiorwerth round barrow, Anglesey.

Central burials in Early Bronze Age burial mounds were often used as a reference point when subsequent burials and structures were added. At Carneddau I, Powys, the central cist, which contained a cremation burial accompanied by a Collared Urn, dated to 2117-1778 cal BC (3600±70 BP, CAR-1257) (Figures 3.15-3.16; Gibson 1993b: 34). Several concentric features were subsequently constructed: stone kerbs and cist 5 *c.* 1991-1766 cal BC (3560±70 BP, CAR-1258), a cairn ring, cist 2 and cist 4 *c.* 1932-1731 cal BC (3440±60 BP, CAR-1260), and a satellite cairn, cist 3 and infill of the central area with cairn material *c.* 1914-1687 cal BC (3530±70 BP, CAR-1259) (Gibson 1993b: 35-41). At Trelystan I, Powys, a central unurned cremation burial in a pit (burial 1) had been covered by a primary kerbed cairn (Figures 3.17-3.18; Britnell 1982: 149). A round barrow was then constructed over the cairn before *c.* 2124-1741 cal BC (3540±70 BP, CAR-285) and three satellite burials (burial 2 to 4) were deposited before all features were covered by an enlarged mound after *c.* 2017-1705 cal BC (3500±60 BP, CAR-278) (Britnell 1982: 149, 153). However, not all structured mounds from this period contained a central burial, as for example at Bedd Branwen and Treiorwerth in Anglesey (Lynch 1971). During the first phase of activity at Bedd Branwen, between *c.* 2028-1889 cal BC (3600±60 BP, GrA-19657; 3610±60 BP, GrA-19643; 3540±60 BP, GrA-19652), five urned cremation burials (pots C, L, M, J and H) were deposited in the periphery of a central standing stone (Figures 3.19-3.20). A further six urned cremation burials (pots A, B, D, E, F and K), were deposited in the second phase of activity, probably between 2006-1819 cal BC (3560±45 BP, GrA-

19566; 3600±60 BP, GrA-19642; 3550±60 BP, GrA-19650), after the construction of the cairn ring and before the final round barrow was built (Brindley 2007: 361-364, Lynch 1971).

None of the Bayesian models for Welsh burial mounds help to define more clearly the sequences of events at burial mounds. This is because there are significant overlaps in the modelled radiocarbon dates for the different phases of activity. For example, the first phase of activity at Brenig 45, Denbighshire, includes the central burial pit, dated to 2136-1820 cal BC (3570±100 BP, HAR-657), three concentric stake circles, a stone wall, and a turf mound (Figures 3.21-3.22; Lewis 1993b: 65-73). Three cremations (cremations 2 to 4) were then inserted into the first turf mound *c.* 2107-1792 cal BC (3520±70 BP, HAR-714), a second turf mound was constructed into which two cremations (cremations 5 and 6) were inserted *c.* 2026-1774 cal BC (3620±60 BP, HAR-712), and the turf mound was covered by a clay capping and encircled by a palisade trench into which cremation 7, dated 2027-1767 cal BC (3620±100 BP, HAR-1027), was deposited. No clear chronological differences could be identified between the primary and secondary burials at Simondston, Glamorgan and the Pillar of Eliseg, Denbighshire: the central cist burial (which is presumed to be primary) at Simondston dated to 2187-1885 cal BC and peripheral burial (B1) (presumed to be secondary) to 2043-1756 cal BC (Figures 3.24-3.25; Brindley 2007: 362, 365, Fox 1938), whilst the primary burial (cist 1) at the Pillar of Eliseg dated to 2123-1941 cal BC and secondary burial (cist 3) to 2021-1887 cal BC (Figure 3.26; Edwards *et al* 2014). The only monument with a clear chronological difference between burial episodes is the Fan Foel round barrow, Carmarthenshire, where the secondary burial, dated to 1935-1765 cal BC (3540±40 BP, GrA-29945 and 3510±40 BP, GrA-29949 combined), is later than the primary burial, dated to 2132-1931 cal BC (3650±40 BP, GrA-29950 and 3635±40 BP, GrA-29963 combined) (Hughes and Murphy 2013).

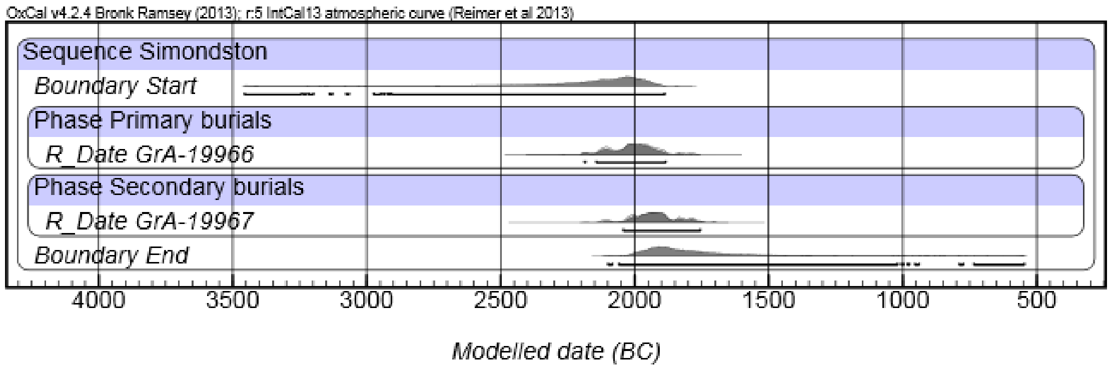

Figure 3.24: Modelled radiocarbon dates for the Simondston round cairn, Glamorgan.

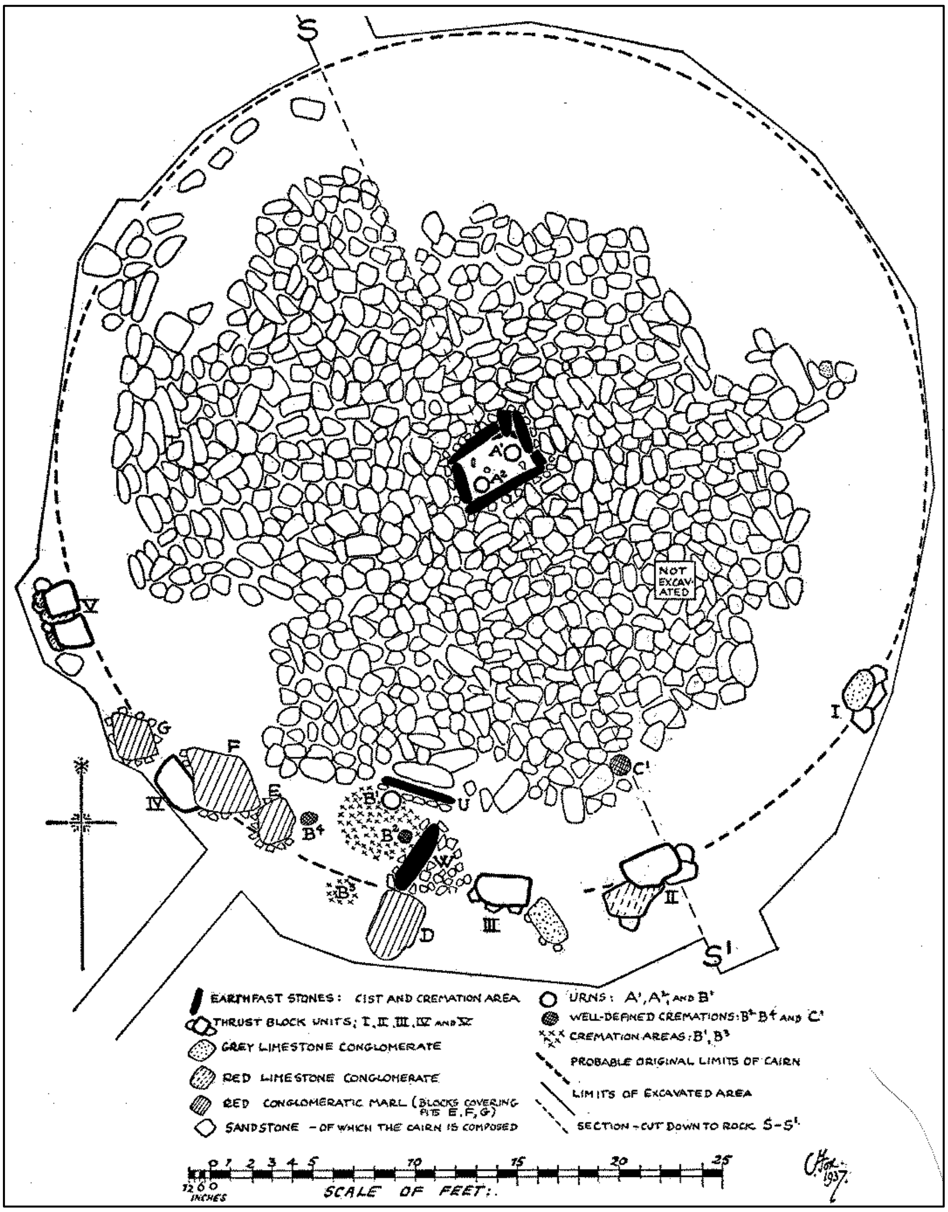

Figure 3.25: Plan of Simondston round cairn, Glamorgan (Taken from Fox 1959: 80).

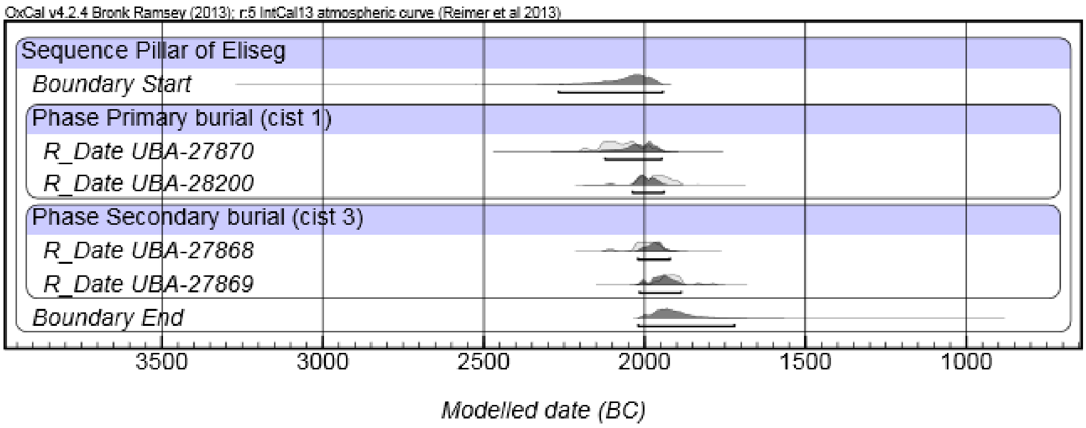

Figure 3.26: Modelled radiocarbon dates for the Pillar of Eliseg round cairn, Denbighshire.

The radiocarbon evidence from the Steynton ring ditch in Pembrokeshire (Barber *et al* 2014) suggests that in some burial mounds a few decades may have lapsed between burial events. The site, which most probably represents a ploughed down round barrow, contained 11 cremation burials in pits cut into the subsoil, all of which belonged to the primary phase of the monument (i.e. before the mound was built). The earliest cremation burial, dated to 2135-1941 cal BC (3651±29 BP, SUERC-54663), is at least 57 years older than the latest burial, dated to 1884-1695 cal BC (3470±29 BP, SUERC-54669). On the other hand, the radiocarbon dates for the five cremation burials from the Fan ring ditch, Ceredigion, which span from 2131-1701 cal BC, are statistically indistinguishable (Figure 3.14; Schlee 2013).

The construction of the final enlarged mound, which covered all the burials and secondary structures, often acted as a formal closure of the burial monument, into which no further features were added. The final enlarged mounds were often capped with stone slabs, as at Carneddau I (Gibson 1993b), Corn Du and Pen-y-Fan (Gibson 1997), or with a layer of clay as at Brenig 45 (Lewis 1993b), perhaps as a way to emphasize this formal closure. However, not all structured round barrows were abandoned after the construction of the mound. At Treiorwerth, secondary urned cremation burials (pots 1 and 3) were deposited when the clay layer was built over the primary cairn probably around 1943-1775 cal BC (3500±60 BP, GrA-19653), and further secondary burials, two of which (pots 2 and 4) dated to between 1926-1756 cal BC (3640±60 BP, GrA-19662 and 3490±45 BP, GrA-19567), were inserted in the enlarged mound (Figure 3.23; Brindley 2007: 366-367, Lynch 1971). In some instances, later burials were deposited in features outside the monument, such as in the third phase ring ditch at Four Crosses 5, Powys (1882-1527 cal BC, 3390±70 BP, CAR-668: Warrilow *et al* 1986: 67), or in cists (cists 1135 and 1110) outside the ring ditch at Llanymynech, Powys (1880-1688 cal BC, 3450±30 BP, SUERC-18873 and 1879-1637 cal BC, 3430±40 BP, Beta-239523: Colls and Halstead 2009: 89).

This evidence therefore suggests that structured round barrows and burial cairns were constructed in a sequential manner, but probably within a relatively short timeframe which is too narrow in most cases to be statistically demonstrated by radiocarbon dates. The majority of these monuments were built in the period *c.* 2200/2100-1700 cal BC, although some may have been constructed slightly later, as suggested by the dates of two peripheral pits with urned cremation burials (pits 30 and 16) at Carneddau II, Powys, dated to 1922-1545 cal BC (3430±70 BP, CAR-1286) and 1879-1510 cal BC (3380±70 BP, CAR-1285) (Gibson 1993b: 25). The construction of the round barrow or burial cairn over the burial features often acted as the final closure of the monument, although in some cases secondary burials may have been inserted later, some into the Middle Bronze Age period (section 3.5.1).

A new type of monument, the ring cairn or ring bank, starts to appear towards the end of the third millennium BC. Some structured round barrows contained a cairn ring which was covered by the final mound, as for example at Bedd Branwen (Lynch 1971). The central primary burials at Breach Farm and Pond Cairn, dated to 2022-1692 cal BC (3520±60 BP, GrA-19964: Brindley 2007: 367) and 1956-1691 cal BC (3506±51 BP, BM-1111: Burleigh and Hewson 1979: 343) respectively, were each encircled by a large, flat cairn ring between 19-24m in external diameter (Fox 1938, Grimes 1938). However, ring cairns/banks refer here to a distinctive class of monuments which, unlike the structured mounds so far discussed, were never covered by a round barrow/cairn.

The earliest example is the first phase of activity at Brenig 44, Denbighshire, dated to *c.* 2040-1739 cal BC (Figures 3.27-3.28), which consisted of a ring cairn with an outer timber circle (Lynch 1993b: 131). Three pits were dug on the inner side of the cairn ring, two (F47 and pit A) which contained only charcoal, and one (F20) with two cremation burials in Collared Urns, one of which (pot B) also with a Pygmy Cup, two pottery 'ear studs' and a burnt plano-convex flint knife (Brindley 2007: 365, Lynch 1993b: 130). At *c.* 1889-1521 cal BC, after the partial dilapidation of the outer face of the cairn ring, the timber posts were probably removed, inner and outer earth banks were built against the cairn ring, and a cremation burial with no grave goods (F43) was deposited in a central pit (Lynch 1993b: 133).

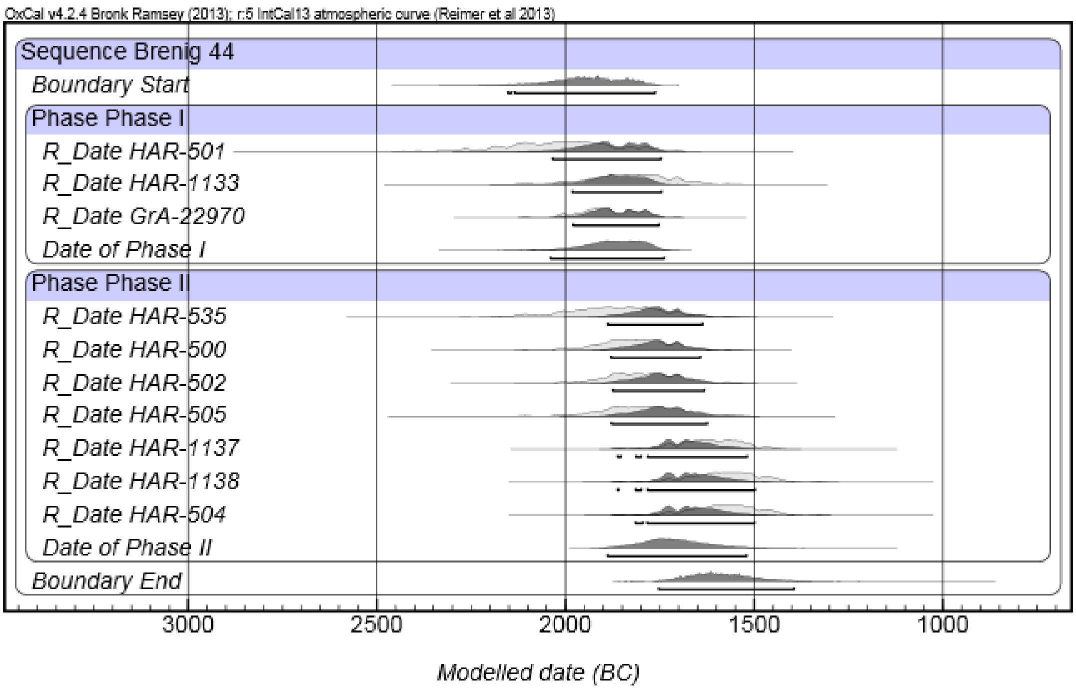

Figure 3.27: Modelled radiocarbon dates for the Brenig 44 ring cairn, Denbighshire.

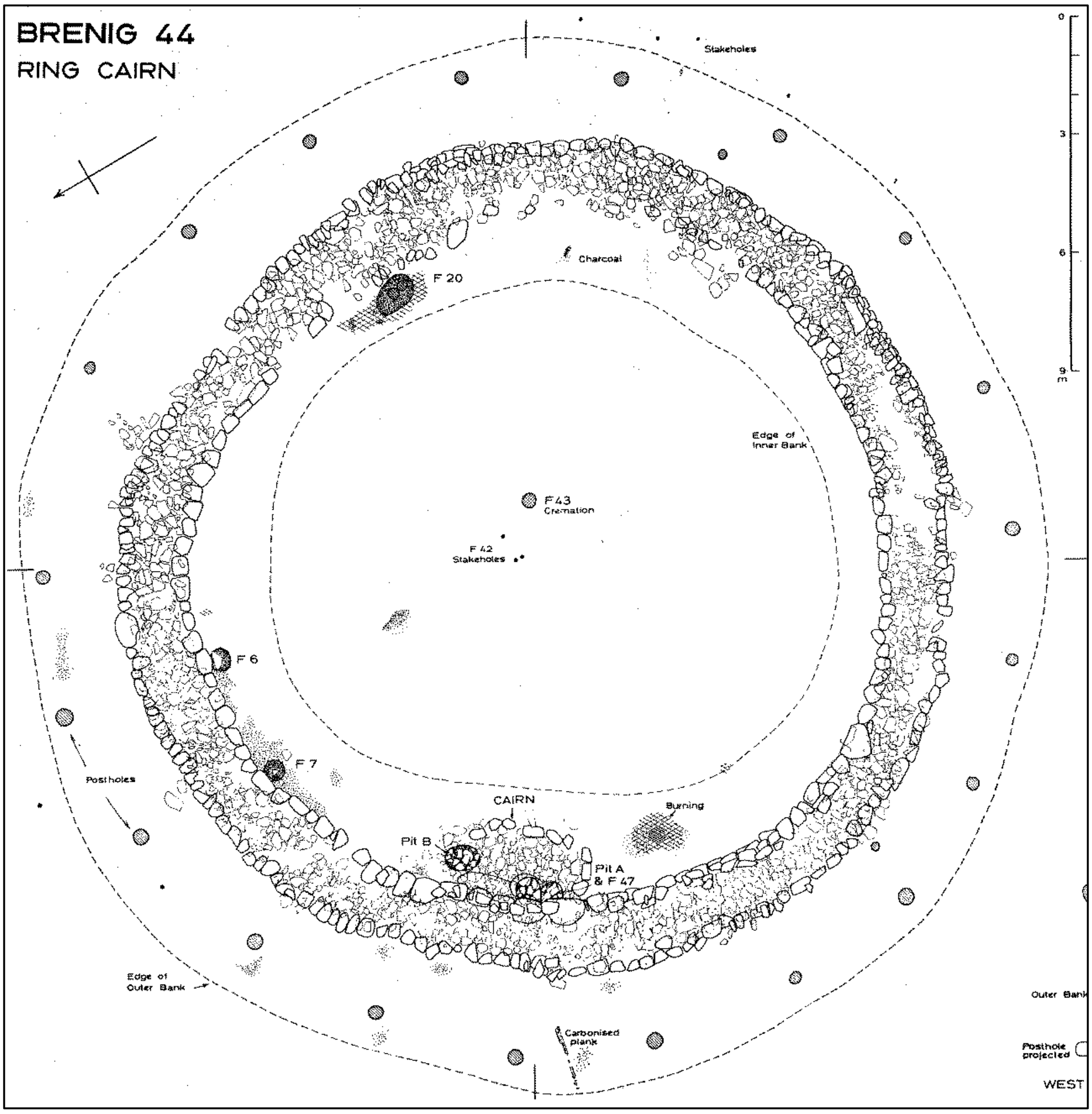

Figure 3.28: Plan of the Brenig 44 ring cairn, Denbighshire (Taken from Lynch 1993b: figure 11.1).

At Brenig 51 (Figures 3.29-3.30), Denbighshire, the primary burial (F7), a cremation burial in a Food Vessel with a flint knife and bone pommel dated to 1881-1680 cal BC (3430±50 BP, GrA-22792: Brindley 2007: 362), was subsequently covered by a broad, flat ring of stones (Lynch 1993a: 105, 107). A cremation burial (F6) with part of a burnt flint knife had been placed in a pit next to the inner face of the cairn ring, and the monument was then modified into a platform cairn when the central part of the ring cairn was filled with stones (Lynch 1993a: 110). A semi-circular cairn built on the NE side of the platform cairn contained a Collared Urn with a burnt lump of flint and a sample of mixed charcoal dated to 1868-1618 cal BC (3420±70 BP, HAR-802: Lynch 1993a: 110-111).

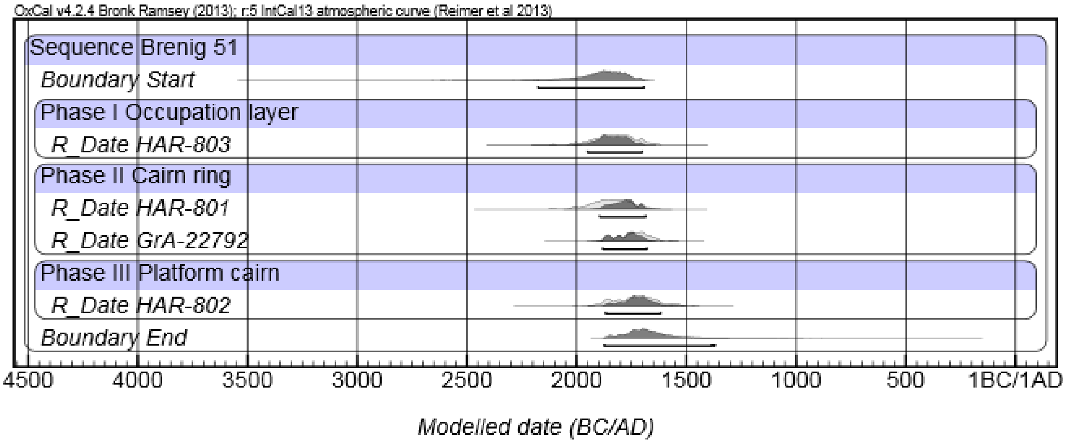

Figure 3.29: Modelled radiocarbon dates for the Brenig 51 platform cairn, Denbighshire.

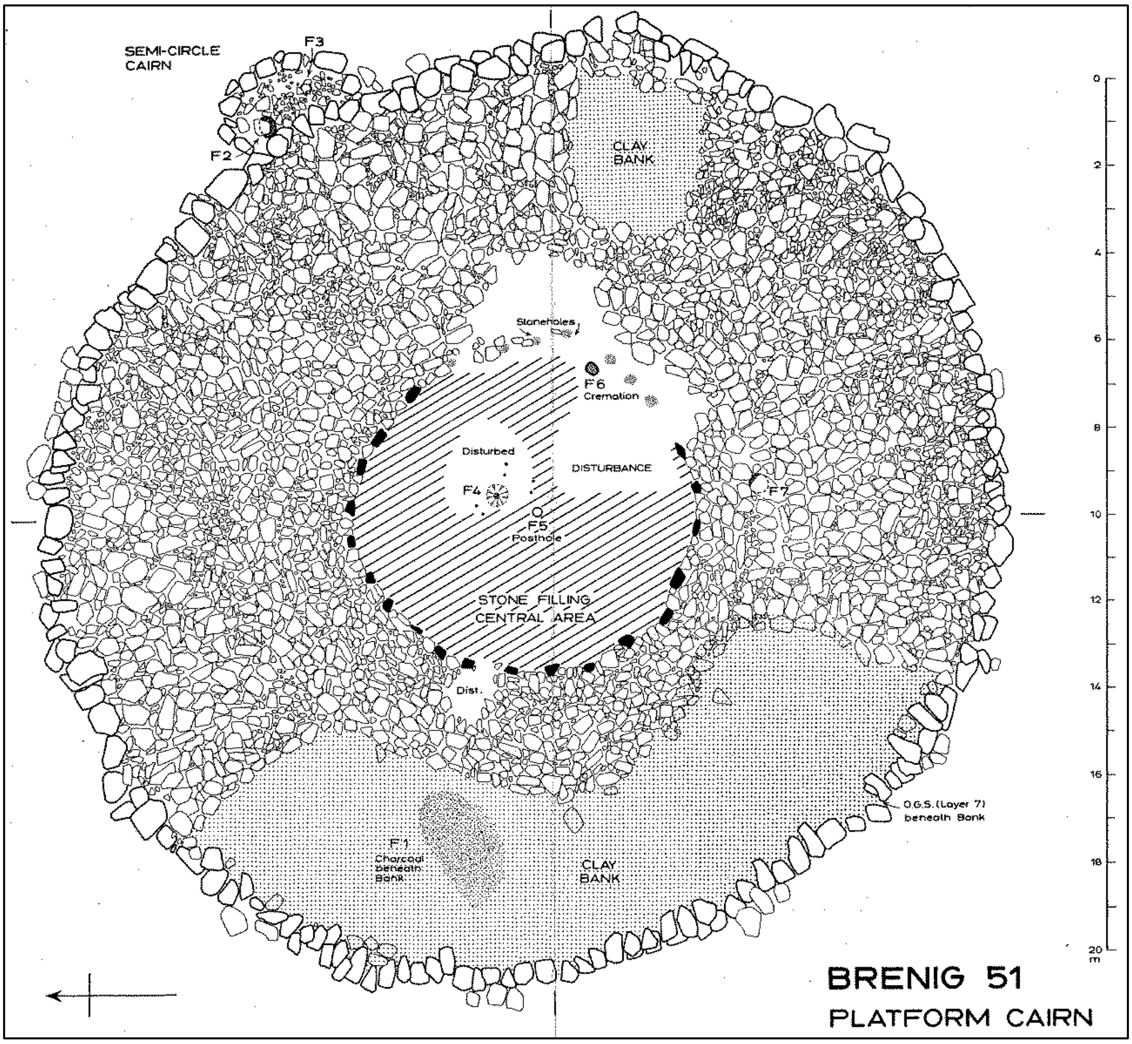

Figure 3.30: Plan of the Brenig 51 platform cairn, Denbighshire (Taken from Lynch 1993a: figure 10.4).

Several ring cairns contained burial deposits: burials F6 and F7 at Brenig 51 (Lynch 1993a: 105, 110); the secondary burial (F43) at Brenig 44 (Lynch 1993b: 133); the unurned cremation burial in the central pit (pit 16) at Great Carn I, Glamorgan, dated to 1895-1531 cal BC (3415±70 BP, Birm-1150: Ward 1988: 161), and the cremation burial in a Collared Urn (F10) from Moel Goedog I, Gwynedd, which probably dates to *c.* 1935-1761 cal BC (3640±70 BP, CAR-165: Lynch 1984b: 37), although this date has a poor level of agreement in the model (A=36.2%; Figures 3.31-3.32). However, the majority of features associated with these sites consist of small charcoal-filled pits, some with token deposits of cremated human bones, usually located near the inner face of the ring cairn/bank. Radiocarbon dates from such features from Brenig 44 (HAR-501, HAR-1133, HAR-504 and HAR-505 in Figure 3.27; Lynch 1993b: 217-218), Moel Goedog I (CAR-160-CAR-164 and CAR-166 in Figure 3.31; Lynch 1984b: 37), Great Carn 2 (Birm-1179: Ward 1988: 164), Caer Euni I (CAR-601: Lynch 1986: 118), Carneddau ring bank I (CAR-1261: Gibson 1993b: 31) and Pentre Farm (HAR-958: Ward 1978: 50) range from *c.* 2000-1500 cal BC.

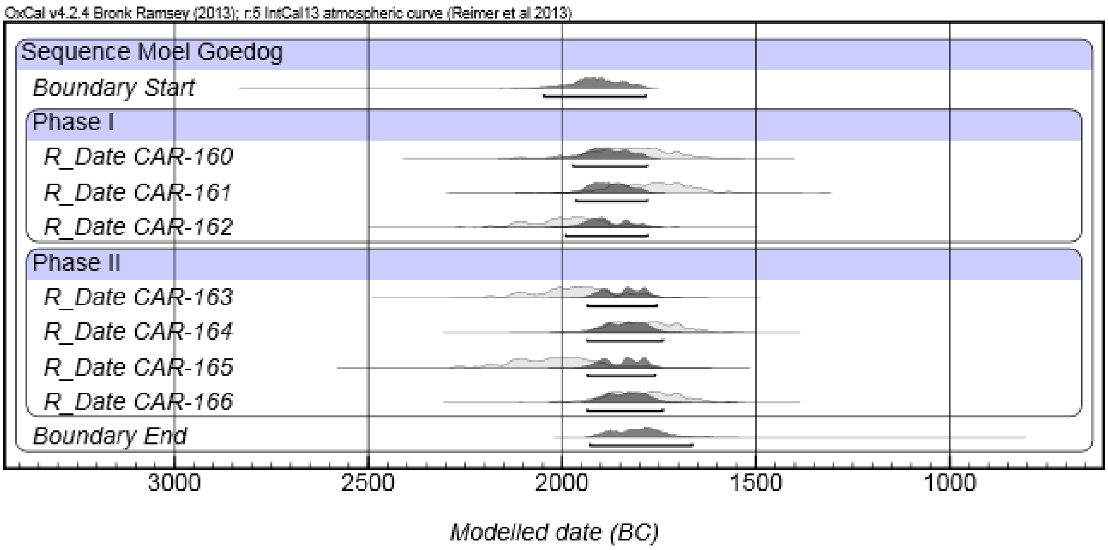

Figure 3.31: Modelled radiocarbon dates for the Moel Goedog I ring cairn, Gwynedd.

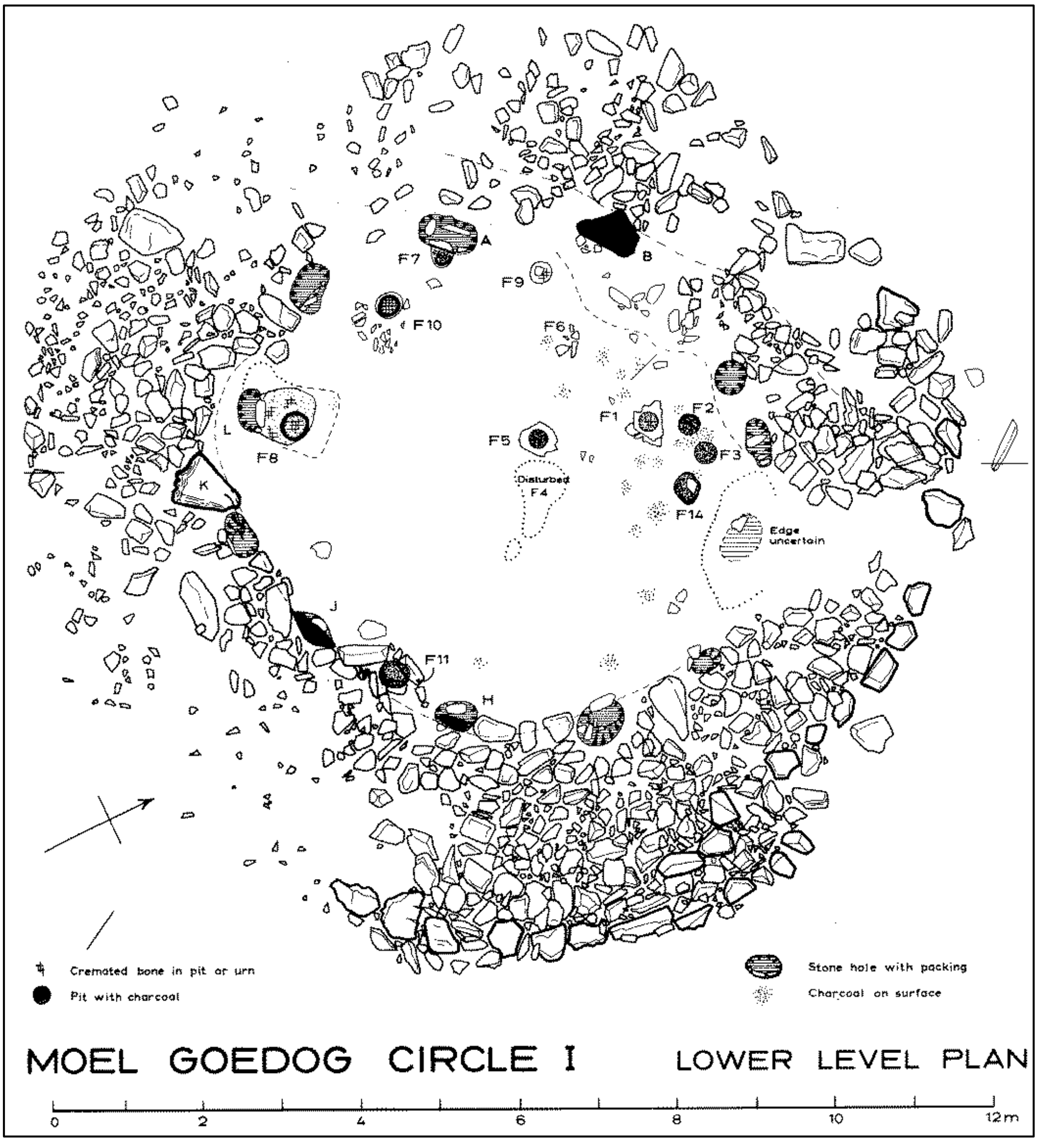

Figure 3.32: Plan of the Moel Goedog I ring cairn, Gwynedd (Taken from Lynch 1984: 15).

3.4.2 Cremation cemeteries

Cremation cemeteries, or flat cemeteries, represent a new form of funerary monument developed towards the end of the third millennium BC. Sixteen cremation cemeteries, or flat cemeteries, have been identified in Wales, all of which have been excavated. These monuments were found in northern Wales (Anglesey, Gwynedd, Denbighshire and Wrexham), West Wales (Ceredigion, Carmarthenshire and Pembrokeshire) and South Wales (Glamorgan), but no example has so far been uncovered in Powys (Figure 3.33).

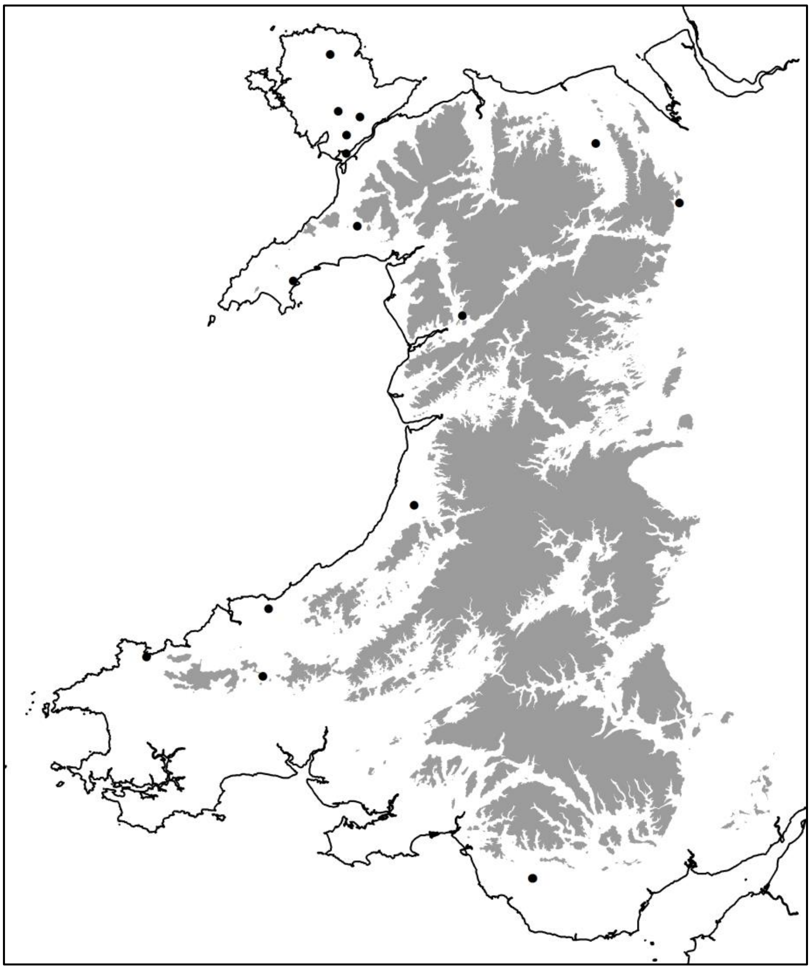

Figure 3.33: Distribution of cremation cemeteries in Wales (land above 230m shaded).

Cremation cemeteries contain multiple cremation deposits often in pottery vessels deposited in small pits or cists. So far 13 cremation burials from Welsh cremation cemeteries have returned Early Bronze Age radiocarbon dates based on charcoal associated with the cremated bones (Figure 3.34). The earliest radiocarbon-dated deposits are from the Capel Eithin cremation cemetery in Anglesey, where five cremation burials in Collared Urns dated to between the 22^{nd}-18^{th} centuries cal BC (C12: 3760±70 BP, CAR-452; C5: 3760±60 BP, CAR-453; C11: 3670±70 BP, CAR-451; C2: 3610±70 BP, CAR-448; C1: 3600±70 BP, CAR-450) (White and Smith 1999: 53-58). The radiocarbon evidence suggests that the Capel Eithin cemetery was in use for several centuries, with two cremation burials in Collared Urns with 19^{th}-16^{th} centuries cal BC dates (C10: 3390±70 BP, CAR-449; C16: 3410±70 BP, CAR-482), and one cremation burial (C15) in a Middle Bronze Age Bucket Urn (section 3.5.2). Another cremation cemetery from Anglesey is Cefn Cwmwd, where a cremation burial (F1010) associated with a Collared Urn and Biconical Cup dated to 2132-1767 cal BC (3587±57 BP, Wk-9289), and a second cremation burial (F1014) in a Collared Urn to 1900-1533 cal BC (3420±69 BP, Wk-9288) (Roberts *et al* 2012: 32).

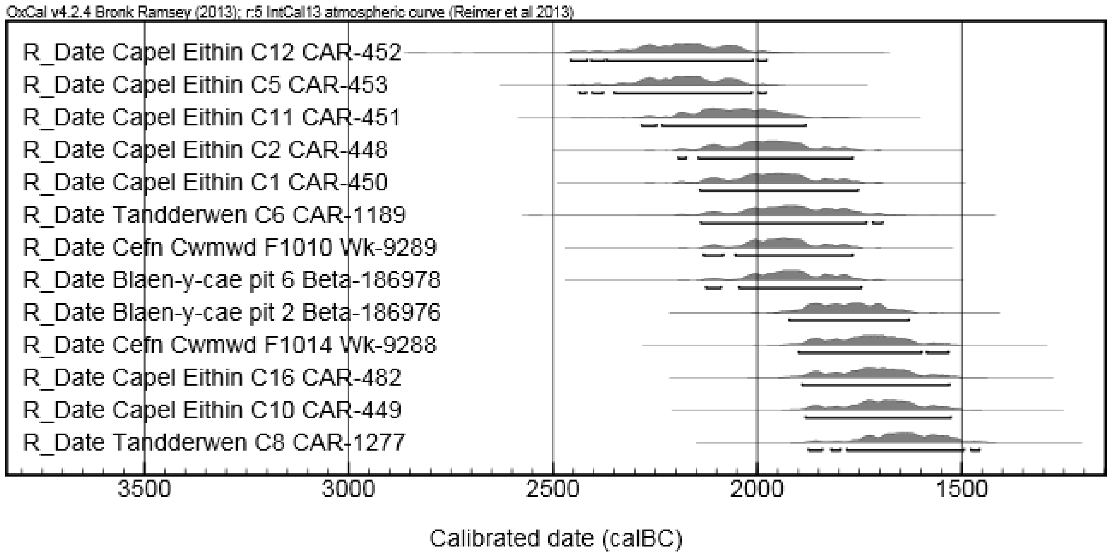

Figure 3.34: Calibrated radiocarbon dates for Early Bronze Age cremation deposits from cremation cemeteries (NB radiocarbon dates considered inaccurate not included; the start dates for Capel Eithin C12, C5 and C11 are too early based on their association with Collared Urns which were first developed in the 22nd century cal BC in Wales (Wilkin 2013: 52)).

Two unurned cremation deposits (C6 and C8) from the cremation cemetery at Tandderwen, Denbighshire, dated to 2139-1694 cal BC (3570±80 BP, CAR-1189) and 1876-1457 cal BC (3350±70 BP, CAR-1277) respectively (Brassil *et al* 1991: 92). Burial C6 was probably contemporary with the deposition of inhumation 2 (dated 2195-1767 cal BC, 3610±70 BP, CAR-1193: Brassil *et al* 1991: 56-57) at the Tandderwen round barrow located *c.* 20m SE of the cremation cemetery. The Blaen-y-cae cremation cemetery in Gwynedd contained a charcoal-filled pit (pit 10) dated 2292-1947 cal BC (3720±60 BP, Beta-186977), a cremation burial in a Collared Urn (pit 6) dated 2127-1746 cal BC (3570±60 BP, Beta-186978) and a pit (pit 2) with a few fragments of cremated bones dated to 1923-1630 cal BC (3460±60 BP, Beta-186976) (Smith 2006: 18).

3.4.3 Circular enclosures: henges, timber circles, pit circles and stone circles

The construction and use of circular enclosures is part of a persistent tradition of monuments which lasted for more than a millennium and a half. The earliest examples in Wales date to the start of the third millennium BC, as for example the Meusydd I timber circle (Jones 2009), the stone arc at Bryn Celli Ddu (Burrow 2010a, Hemp 1930) and the Sarn-y-bryn-caled 2 penannular ring ditch (Gibson 1994) (section 3.1). Later examples include the Bryn Gwyn (Smith 2012) and Dyffryn Lane I (Gibson 2010b) stone circles, probably built *c.* 2900-2500 cal BC (section 3.2.2), the Dyffryn Lane I henge, built *c.* 2700-2400 cal BC (section 3.2.3; Gibson 2010b) and the Walton Court ditched enclosure, dated to *c.* 2600-2300 cal BC (section 3.3.1; Jones 2010). Seven circular enclosures in Wales have returned Early Bronze Age dates, which include three timber circles (Sarn-y-bryn-caled 1 and Pont-ar-daf in Powys, and Brenig 44 in Denbighshire), two henges (Llandygai A and B in Gwynedd), and two pit circles (Pantymenyn and Yr Allor in Carmarthenshire).

Timber circles

Timber circles are defined as "sites which have been shown by excavation to have consisted of one or more usually concentric settings of free-standing upright posts" (Gibson 1998: 5). Seven timber circles have been recorded in Wales, all of which are located in eastern Wales (Denbighshire, Flintshire and Powys) (Figure 3.35).

The central pit at the Sarn-y-bryn-caled 1 timber circle in Powys contained a primary unurned cremation burial with four barbed-and-tanged arrowheads dated to 2116-1831 cal BC (3600±35 BP, SUERC-27586; 3595±35 BP, SUERC-27587) and a secondary cremation burial with a Miniature Vase Food Vessel dated to 2009-1766 cal BC (3545±35 BP, SUERC-27589) (Figure 3.36; Gibson 2010c: 351-352). A further two timber circles belong to this period: the outer timber circle associated with the first phase of activity at Brenig 44, dated to *c.* 2034-1746 cal BC (Phase I in Figure 3.27), and the small 3m wide timber circle at Pont-ar-daf, Powys, dated to 2016-1687 cal BC (3510±60 BP, UB-

3216) from a sample of mixed charcoal in the bedding trench (Gibson 1993a: 177).

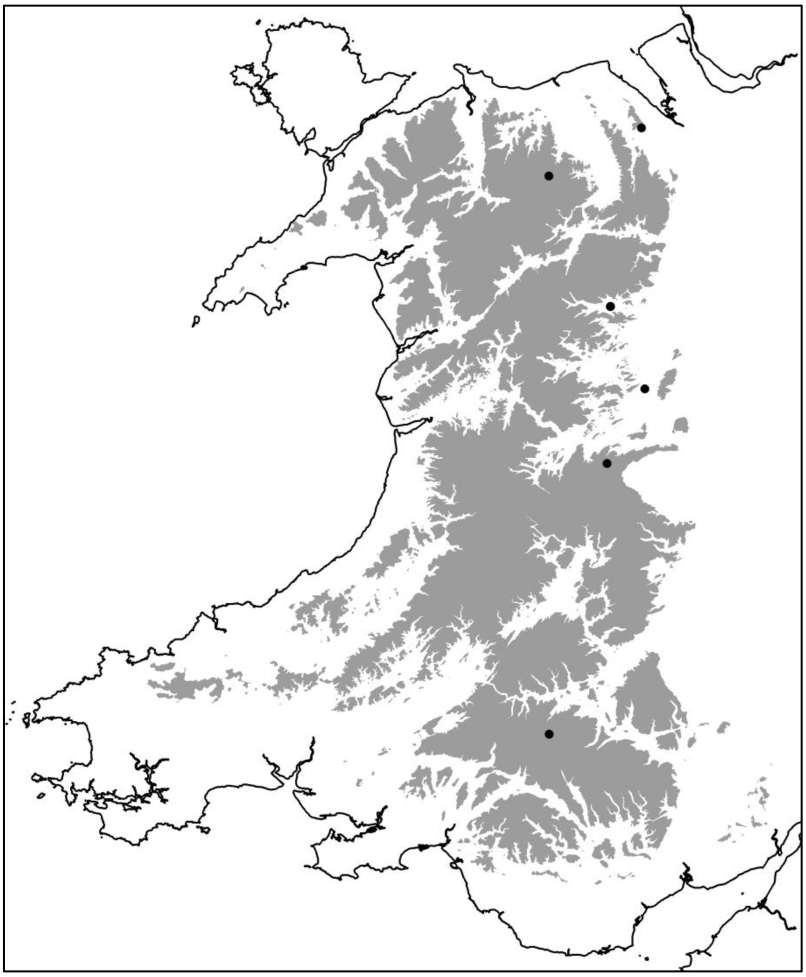

Figure 3.35: Distribution of timber circles in Wales (land above 230m shaded).

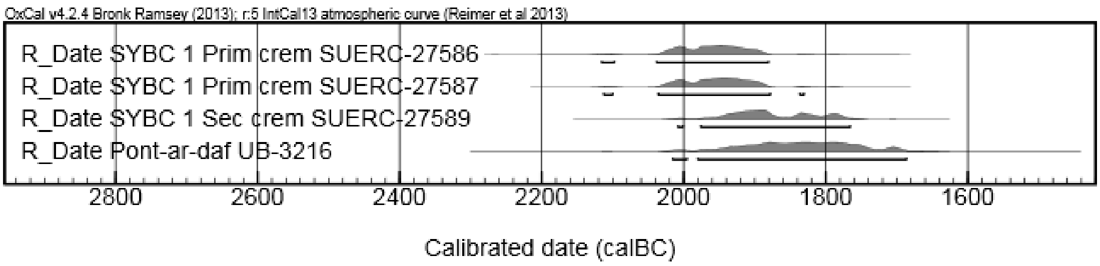

Figure 3.36: Calibrated radiocarbon dates for Early Bronze Age timber circles in Wales (SYBC 1 = Sarn-y-bryn-caled 1, Prim = primary, Sec = secondary, crem = cremation).

Henges

In Wales 19 sites have been classified as henges or hengiform monuments. These monuments appear to be predominantly distributed in lowland coastal areas in Wales (Figure 3.37). However, a group of five embanked enclosures in

South-East Wales (southern Powys, Glamorgan and Monmouthshire) are located in upland regions (Figure 3.37).

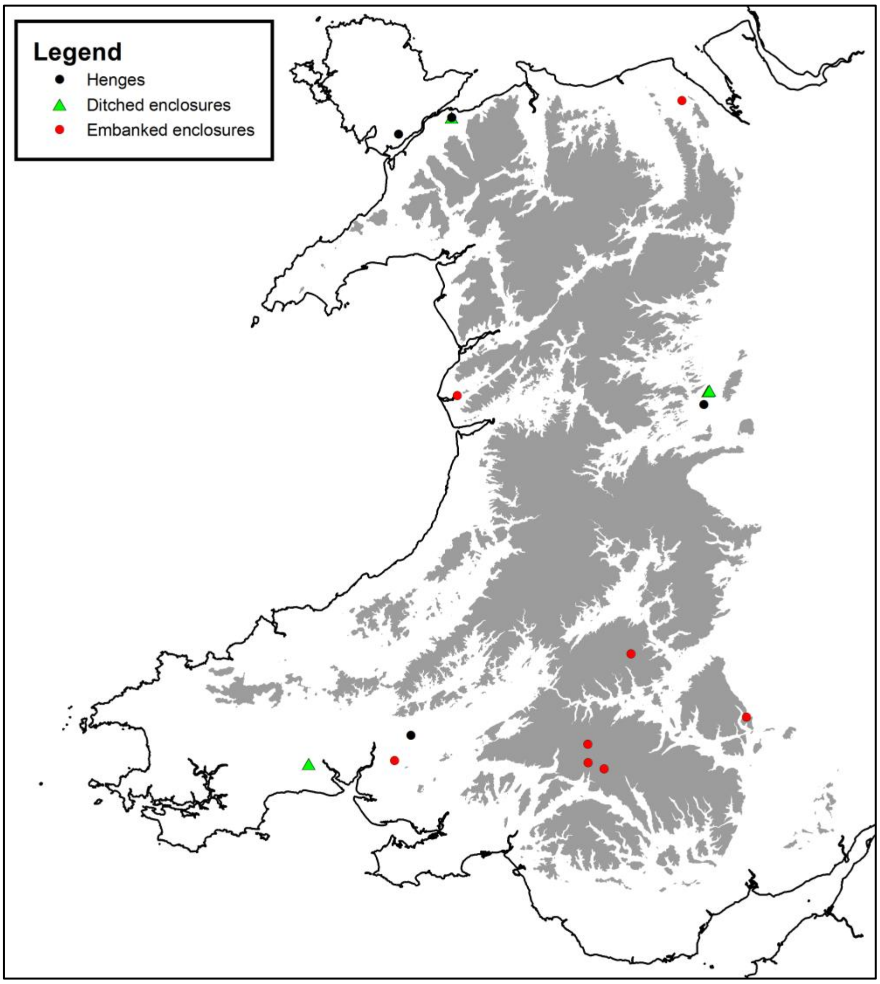

Figure 3.37: Distribution of henges, embanked enclosures and ditched enclosures in Wales (land above 230m shaded).

Three cremation burials were found associated with henges. This includes deposit A13 from Llandygai A, Gwynedd, deposited in a pit inside the *c.* 50m wide circular bank (Lynch and Musson 2001: 36, 47). Cremated bone from deposit A13 dated to 1974-1700 cal BC (3525±45 BP, GrA-22794) (Figure 3.3). Although the excavators have suggested that the Llandygai A henge monument was constructed *c.* 3200-3100 cal BC (Lynch and Musson 2001: 55), the radiocarbon determinations used to provide this estimation probably suffer from the 'old wood' effect (section 3.1.4). This includes the radiocarbon determinations based on mixed charcoal samples from the cremation circle located outside the entrance which span from 3631-2876 cal BC (4480±150 BP, NPL-224; 4320±30 BP, GrN-26817; 4420±40 BP, GrN-26818), and from the near-central fire-pit (FA1) from which mature oak dated to 3339-2933 cal BC (4450±40 BP, GrN-27192) (Figure 3.4) (Lynch and Musson 2001: 118-119). The sample of mature oak charcoal from secondary ditch fills (layer 4), dated 3518-2681 cal BC (4420±140 BP, NPL-221), could potentially suffer from the same problem. The only secure radiocarbon date comes from the cremated bones from deposit A252 in pit FA370 which dated to 3359-3013 cal BC (4480±50 BP, GrN-22954) (section 3.1.1). Although pit FA370 was located near the inner aspect of the circular bank, no clear stratigraphical relationship could be established between the two features (Lynch and Musson 2001: 43). The construction of the Llandygai A henge could therefore have taken place anytime in the third millennium BC, probably between the deposition of cremation burials A252 and A13 (Gibson 2012a: 14).

Two cremation burials from the Llandygai B henge, located *c.* 160m SW of the Llandygai A henge, also date to the Early Bronze Age period (Figure 3.38) (Lynch and Musson 2001: 121). Cremated bones from burial B120, found in a pit (FB138) at the centre of the monument, dated to 2275-1945 cal BC (3700±50 BP, GrA-22966). A less precise date was obtained from mature oak charcoal associated with cremation burial B23 (2568-1758 cal BC, 3740±145 BP, NPL-222), found in pit FB2 outside the SW entrance. As with the Llandygai A henge, no secure radiocarbon determinations are available to date the construction of the Llandygai B henge (Lynch and Musson 2001: 120-121). A sample of mixed charcoal from a pit in the secondary ditch silts provides a *Terminus Ante Quem* for the construction of the ditch of 2023-1772 cal BC (3560±40 BP, GrN-26822). All other radiocarbon determinations come from charcoal from pits located inside or outside the circular ditch: pit FB151, which contained a Graig Lwyd axe, stone axe fragments and flints, dated to 2910-2581 cal BC (4210±50 BP, GrN-26827; 4140±50 BP, GrA-20014); pit FB147, with Grooved Ware sherds, dated to 2873-2496 cal BC (4100±50 BP, GrA-20013); and pit FB27, with Beaker sherds, dated to 2140-1829 cal BC (3620±50 BP, GrN-26820). Although all of these radiocarbon determinations could potentially suffer from the 'old wood' effect, the ceramic evidence suggests that activity at Llandygai B spanned from *c.* 3500-2900 BC (based on the Peterborough Ware sherds in pit FB39: Lynch and Musson 2001: 69) to *c.*

2100-1700 BC (based on the LN Beaker sherds in pits FB27, 29 and 30: Lynch and Musson 2001: 65-68) (Gibson and Kinnes 1997, Needham 2005).

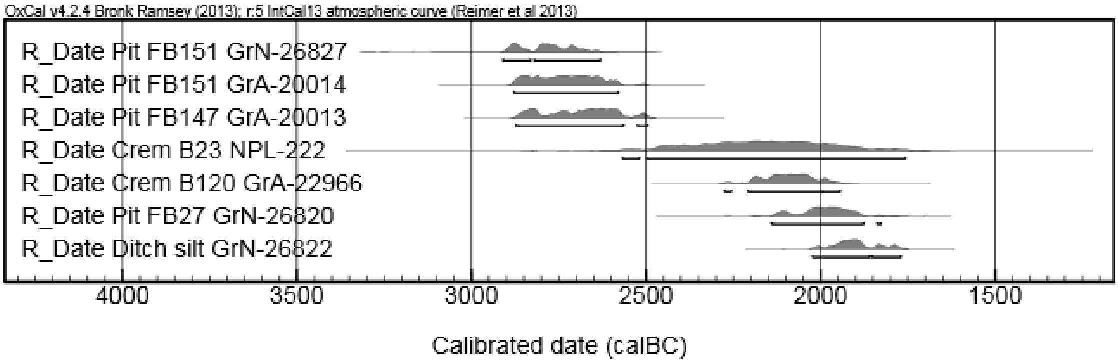

Figure 3.38: Calibrated radiocarbon dates for the Llandygai B henge, Gwynedd (Crem = cremation).

Another undated monument is the *c.* 35m wide circular ditch at Llandygai D (Lynch and Musson 2001: 81-83). Mixed charcoal from pit FD1 inside the enclosure, which contained sherds of featureless pottery and flint flakes, dated to 2833-2465 cal BC (4020±40 BP, GrN-26829: Lynch and Musson 2001: 81). The presence of at least one causeway, combined with the absence of burial deposits, suggests that Llandygai D could represent an embanked enclosure (Lynch and Musson 2001: 83). A similar monument is the *c.* 19m wide circular ditch with two causeways at Coed-y-dinas ring ditch 1, Powys, where patterns in the ditch silt lines suggested the presence of an internal bank (Gibson 1994: 162-167). As with Llandygai D, no burial deposits were found to be associated with the enclosure. A sample of mixed charcoal associated with Beaker sherds in the secondary ditch fills dated to 2135-1890 cal BC (3630±45 BP, BM-2837) (Gibson 1994: 164-165).

Pit circles

Pit circles refer to sites with multiple pits, usually set in a circular or oval setting, which did not hold timber posts (Gibson 1998: 5). Four pit circles have been excavated in Wales: Pantymenyn and Yr Allor in Carmarthenshire (Kirk and Williams 2000), Llandygai A in Gwynedd (Lynch and Musson 2001) and Sarn-y-bryn-caled in Powys (Blockley and Taverner 2002). This type of monument has so far been identified only in lowland areas in the North-West (Gwynedd), South-West (Carmarthenshire) and central regions of Wales (Powys) (Figure 3.39).

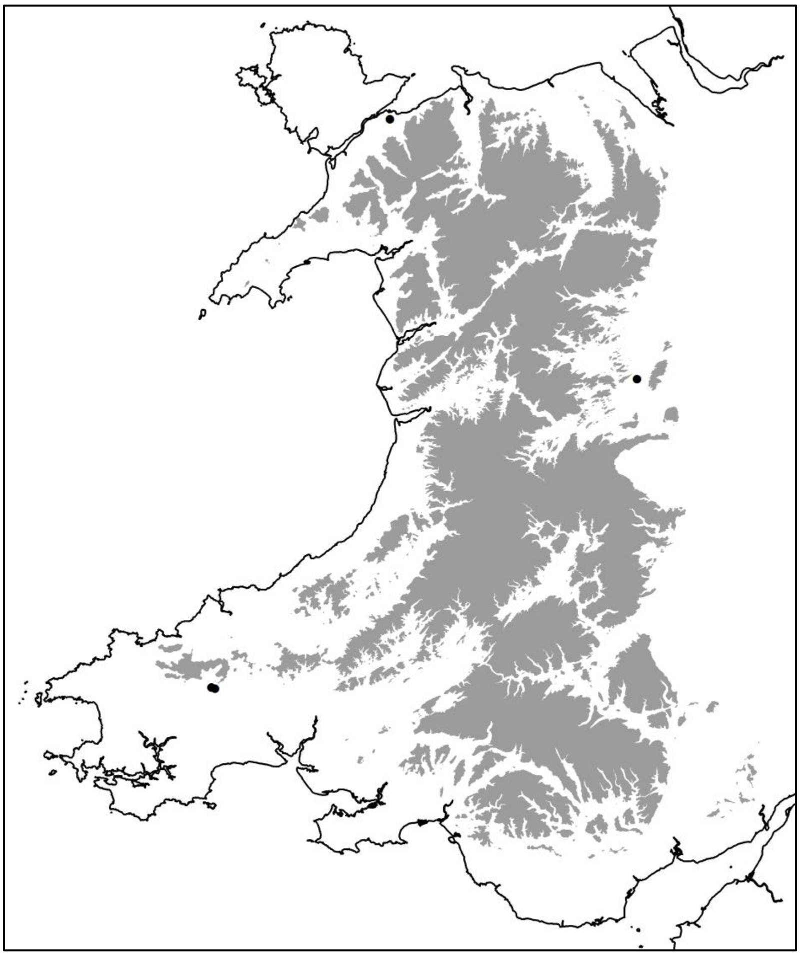

Figure 3.39: Distribution of pit circles in Wales (land above 230m shaded).

The 7.2 x 5.5m wide pit circle at Yr Allor, Carmarthenshire, consisted of a circle of eight pits which surrounded a central pit (Kirk and Williams 2000: 269). The central pit contained a token deposit of cremated human bones, probably deposited after the removal of a stone or timber upright (Kirk and Williams 2000: 271). Charcoal from the fill of a recut in the central pit provided a *Terminus Ante Quem* of 2201-1776 cal BC (3630±70 BP, CAR-1491) to 1957-1613 cal BC (3460±70 BP, CAR-1464) for the token cremation deposit (Figure 3.40; Kirk and Williams 2000: 265). Two other pits contained artefacts: a hammerstone in pit 13 and a Collared Urn in pit 166 (Kirk and Williams 2000: 271). Oak charcoal sealed under the Collared Urn provided a *Terminus Post Quem* of 2126-1693 cal BC (3550±70 BP, CAR-1490) for the deposition of the pottery vessel in pit 166 (Kirk and Williams 2000: 265). The Pantymenyn pit circle, located *c.* 950m

NW of the Yr Allor pit circle, also dates to the Early Bronze Age period (Kirk and Williams 2000: 263-268). Two of the seven pits, which formed a *c.* 7 x 6m wide circle around a central hearth, contained Early Bronze Age pottery, which include Food Vessel sherds in pit 80. In addition to the Early Bronze Age pottery sherds, pit 77 also contained cremated animal bones and charcoal, which dated to 2113-1686 cal BC (3530±70 BP, CAR-1496) (Kirk and Williams 2000: 265). Samples of mixed charcoal from the central hearth, which also contained Early Bronze Age pottery sherds, cremated bones (animal and probably human), dated to 2118-1690 cal BC (3540±70 BP, CAR-1462) and 1916-1624 cal BC (3450±60 BP, CAR-1492) (Kirk and Williams 2000: 265).

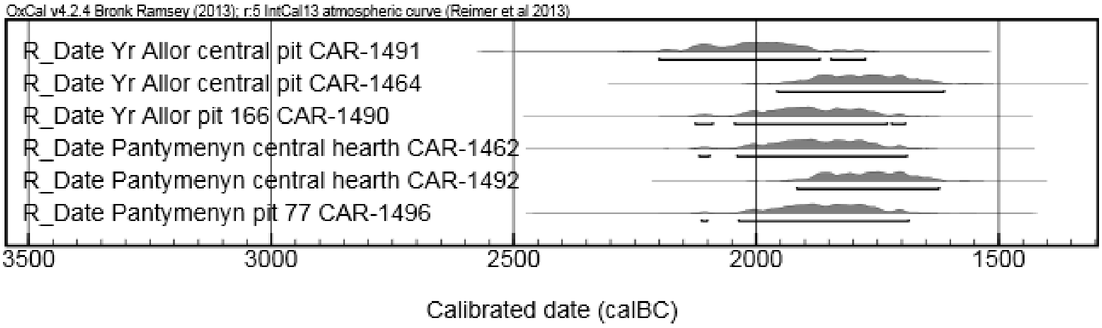

Figure 3.40: Calibrated radiocarbon dates for Early Bronze Age pit circles.

The deposition of token amounts of cremated human bones represents a common practice in pit circles. Another example of this practice was identified at the Llandygai A pit circle in Gwynedd (Lynch and Musson 2001: 48-53). Although radiocarbon dates from this monument spanned from the 36th-29th centuries cal BC (Figure 3.4), the radiocarbon-dated charcoal samples probably suffer from the ‘old wood’ effect (see above). However, not all pit circles were found to contain token cremations. For example, the only datable finds associated with the Sarn-y-bryn-caled pit circle in Powys were pottery sherds, which included Peterborough Ware, Grooved Ware and Beaker pottery (Blockley and Tavener 2002: 43).

Stone circles

Stone circles are “circular or rectangular (in the case of a four-poster) arrangement of standing stones believed to be prehistoric in date” (Gibson 1998: 5). So far 72 stone circles have been recorded in Wales. This type of monument is found distributed throughout Wales, although the majority of sites are located in upland regions (Figure 3.41).

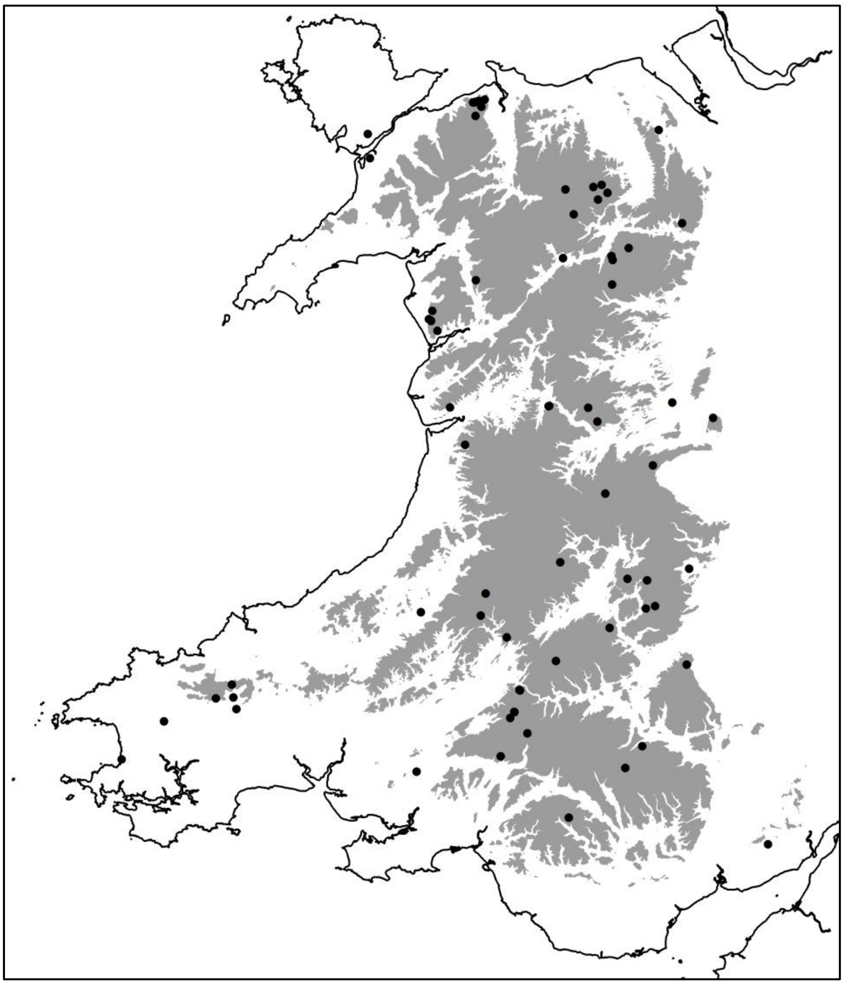

Figure 3.41: Distribution of stone circles in Wales (land above 230m shaded).

No Early Bronze Age radiocarbon determinations are available for stone circles in Wales. Only three excavated monuments are associated with radiocarbon dates: the stone arc from Bryn Celli Ddu, Anglesey, dated to *c.* 3200-3000 cal BC (section 3.1.3; Burrow 2010a: 256), the Bryn Gwyn stone circle, Anglesey, dated to *c.* 2900-2600 cal BC (section 3.2.2; Smith 2012: 34) and the Dyffryn Lane I stone circle, Powys, dated to *c.* 2900-2500 cal BC (section 3.2.2; Gibson 2010b: 227). However, at least one excavated stone circle dates to the Early Bronze Age period based on ceramic associations, the *c.* 24m wide embanked stone circle at Druid's Circle, Conwy (Griffiths 1960). Ceramic finds include a Food Vessel Urn, which contained a cremation burial, in the central cist (primary cist), and a second Food Vessel Urn, with a cremation burial and ogival bronze knife, in a pit near the central cist (secondary urn 1) (Griffiths 1960: 314-316). Food Vessel Urns date to a period between *c.* 2200-1700 cal BC (Brindley 2007: 328, Wilkin 2013: 40).

3.5 Middle Bronze Age (*c.* 1700-1200 BC)

The radiocarbon evidence suggests that four types of monuments were constructed in the Middle Bronze Age period in Wales: burial mounds (section 3.5.1), cremation cemeteries (section 3.5.2), standing stones (section 3.5.3) and stone circles (section 3.5.4). Possible Middle Bronze Age cremation pyres were also identified at the Pennant Melangell Church in Powys (section 3.5.5).

3.5.1 Burial mounds

Elsewhere in Britain, burial mounds built after the mid-18th century BC often represented simple structures in which a primary burial was covered by a circular mound usually constructed in a single operation (Bradley and Fraser 2010, Garwood 2007). Similar monuments may also have been constructed in Wales, although few radiocarbon dates are available to support this (Figure 3.42). Examples include the cremation burial in a 'Late' Collared Urn dated to 2113-1686 cal BC (3530±70 BP, CAR-1037) from a sample of mixed charcoal in the burial pit at Lan Fawr III, Powys, which was covered by a 5m wide round cairn after *c.* 1862-1446 cal BC (3330±70 BP, CAR-1038) (Britnell 1988: 14). The 5m wide kerb cairn at Brenig 6, Denbighshire, which covered a patch of grey soil with unidentified burnt bones, probably dates to *c.* 1512-1054 cal BC (3070±90 BP, HAR-536) based on a sample of mixed charcoal from a hearth outside the cairn (Allen 1993: 97).

The radiocarbon evidence suggests that not all Middle Bronze Age burial mounds represented small structures. At Six Wells 271', Glamorgan, a cremation burial in a Trevisker Ware vessel in a cist dated to 1608-1412 cal BC (3210±40 BP, GrA-27623; 3215±35 BP, GrA-27617: Quinnell 2012: 155). The cist was incorporated in a 15m wide stake circle covered by a *c.* 27m wide round barrow (Fox 1941). At Kilpaison Burrows, Pembrokeshire, cremated bones from the central unurned cremation burial in a pit dated to 1951-1703 cal BC (3520±40 BP, GrA-27618: Brindley 2007: 366). At least five secondary burials, four of which associated with Collared Urns, were inserted in pits after a *c.* 13m wide round barrow was built over the primary burial (Fox 1926a). Cremated bones from two of these burials (CII and CV) dated to 1749-1546 cal BC (3370±35 BP, GrA-27619) and 1690-1513 cal BC (3325±35 BP, GrA-27617) (Brindley 2007: 366-367).

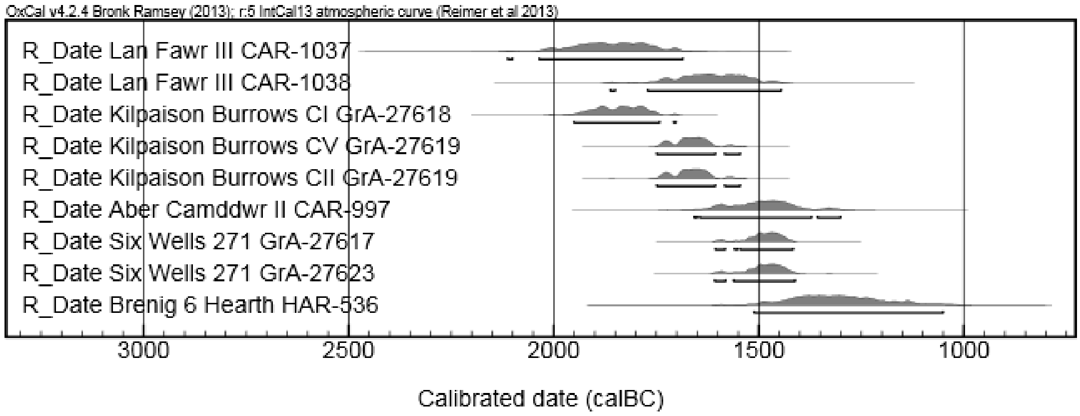

Figure 3.42: Calibrated radiocarbon dates for Middle Bronze Age burial mounds.

A further four cremation burials from burial mounds in Wales probably date to the Middle Bronze Age period based on ceramic associations. This includes two cremation burials in Bucket Urns from Cornell Pen y Bedd in Denbighshire (Davies 1949: 439-441), a cremation burial in a Barrel Urn at Crug-coy in Ceredigion (Savory 1980: 153), and a satellite burial in a Barrel Urn at Welsh St Donats 3 in Glamorgan (Ehrenberg *et al* 1981: 820). Barrel and Bucket Urns are two types of pottery vessels which typically date to a period between *c.* 1700-1200 BC (Needham 1996). These cremation burials represent secondary insertions into burial mounds (Cornell Pen y Bedd and Crug-coy), or in a feature outside a burial mound (Welsh St Donats 3).

3.5.2 Cremation cemeteries

Two groups of burial pits were identified at the Coity cremation cemetery in Glamorgan (Richmond 2009). The first group (Coity 1) consisted of four pits with cremation burials, three of which in Collared Urns (burials 202, 209 and 211) (Richmond 2009: 7-14). Charcoal associated with burial 209 dated to 1741-1529 cal BC (3350±40 BP, Beta-25792) (Richmond 2009: 11). Two large stone blocks found *c.* 3m from the burial pits were interpreted as to represent burial markers. The second group (Coity 2) contained two burial pits with unurned cremation burials (pits 216 and 219) (Richmond 2009: 14-15). Two unurned cremations in pits radiocarbon-dated to between 1623-1427 cal BC (3262±35 BP, SUERC-44825; 3263±35 BP, SUERC-44826; 3225±35 BP, SUERC-44827) were also excavated near Llanystumdwy in Gwynedd (Kenney *et al* 2013: 14-16).

The radiocarbon dates from the Capel Eithin cemetery in Anglesey suggest that the most active phase of activity at the site occurred in the Early Bronze Age period (section 3.4.2). However, the ceramic evidence – the Bucket Urns in pits C14 and C15 – suggests a later phase of activity in the Middle Bronze Age period (White and Smith 1999: 58). The Bucket Urn in feature C15 contained a cremation burial dated to 807-430 cal BC (2530±70 BP, CAR-455: White and Smith 1999: 58) based on associated charcoal, although this date is too late for this type of pottery vessel (Needham 1996).

3.5.3 Standing stones

At least 647 standing stones, stone rows and stone settings have so far been recorded in Wales. These monuments were found in both lowland and upland regions (Figure 3.43). Whilst standing stones are distributed throughout Wales, stone rows and stone settings appear to be more common in eastern and southern Wales (Figure 3.43).

Several excavated standing stones in Wales have returned Middle Bronze Age radiocarbon determinations (Figure 3.44). Oak charcoal from the base of a re-cut of a pit (pit 135) NW of the standing stone at Longstone Field, Pembrokeshire, dated to 1748-1436 cal BC (3310±70 BP, CAR-315: Williams 1989: 33). Two pits (pits 3 and 9) near the standing stone contained small cremated bone deposits (Williams 1989: 28). Charcoal from pits associated with standing stones at Gors and Mynydd Llangynderyn in Carmarthenshire dated to 1741-1428 cal BC (3290±70 BP, CAR-957: Marshall 1985: 33) and 1607-1053 cal BC (3090±100 BP, Birm-950: Ward 1983: 36) respectively. Some sites are probably later in date, as for example the standing stone (A1) at Aber Camddwr II, Ceredigion, placed in a pit (pit 4) after *c.* 1402-1013 cal BC (2980±70 BP, CAR-995: Marshall and Murphy 1991: 65), and the token cremation in a small pit located *c.* 5m NE of the standing stone at Plas Gogerddan, Ceredigion, dated to 1390-973 cal BC (2950±70 BP, CAR-993: Murphy 1992: 7).

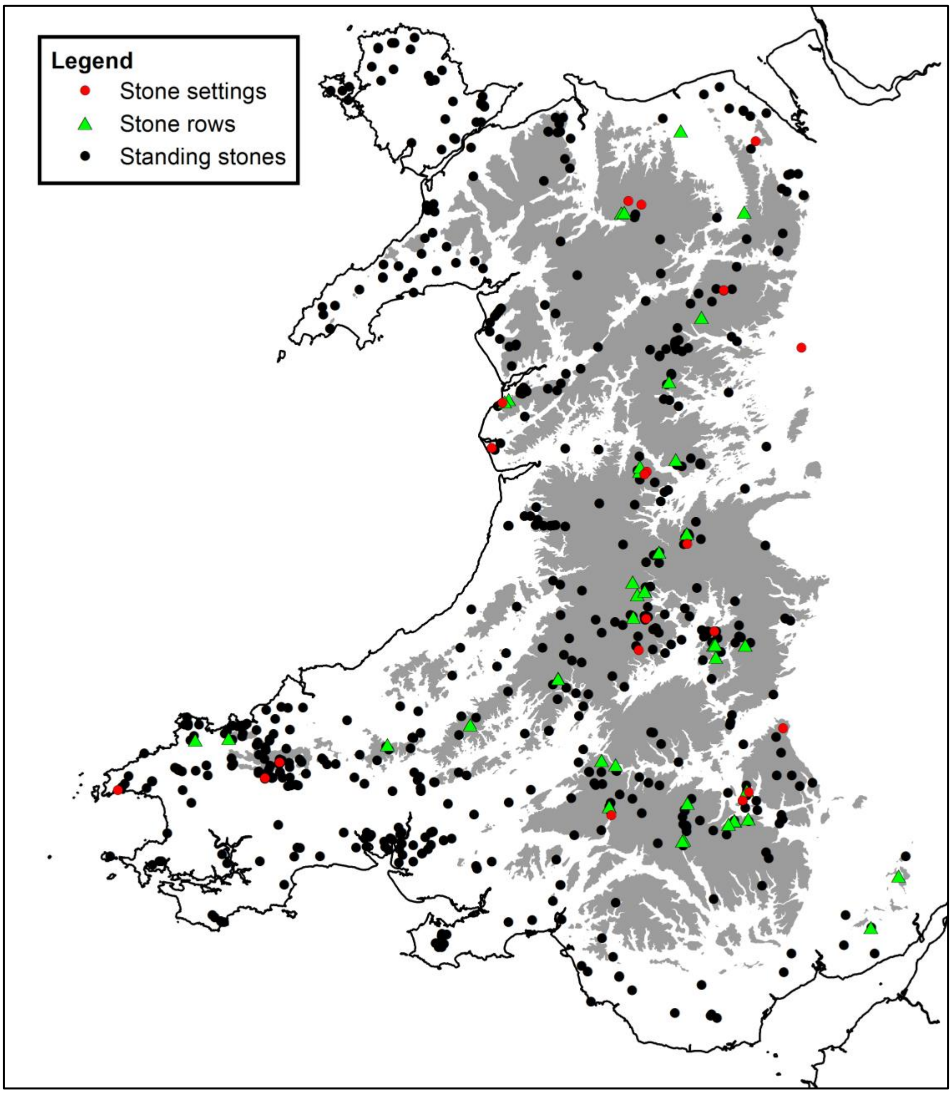

Figure 3.43: Distribution of standing stones, stone rows and stone settings in Wales (land above 230m shaded).

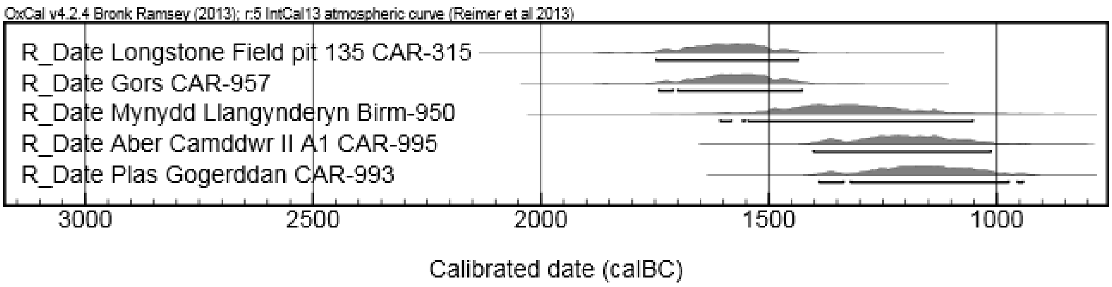

Figure 3.44: Calibrated radiocarbon dates for Middle Bronze Age standing stones.

3.5.4 Stone circle: Penmaenmawr 280

At Penmaenmawr 280, Conwy, two short-cists (cists A and B) with unurned cremation burials were found outside the *c.* 4m wide stone circle (Griffiths unpublished). Charcoal from a firepit located near the burial cists dated to 1659-935 cal BC (3080±145 BP, NPL-12) (Burrow and Williams 2008). Based on the assumption that the stone circle, cists and firepit were contemporaneous, the Penmaenmawr 280 monument and associated burials probably date to the Middle Bronze Age period. This would suggest that stone circles represent the most persistent type of monument in Wales, with radiocarbon-dated examples which span from the end of the fourth millennium BC (section 3.1.3) to the mid-second millennium BC.

3.5.5 Cremation pyres: Pennant Melangell Church

The excavation of the Pennant Melangell Church in Powys revealed two series of shallow pits cut into the subsoil associated with dense concentration of charcoal, small amounts of cremated human bones and Middle Bronze Age pottery sherds (Britnell 1994: 54, 68). These features, which were also found to be associated with burnt soil and small burnt stones, could possibly represent the remains of cremation pyres. Samples of mixed charcoal from three of these pits, pits 174 and 279 under the east end of the church, and pit 351 at the west end, dated to 1611-1300 cal BC (3180±60 BP, CAR-1309), 1606-1221 cal BC (3140±70 BP, CAR-1249) and 1414-1031 cal BC (3000±70 BP, CAR-1250) (Figure 3.45; Britnell 1994: 54, 68).

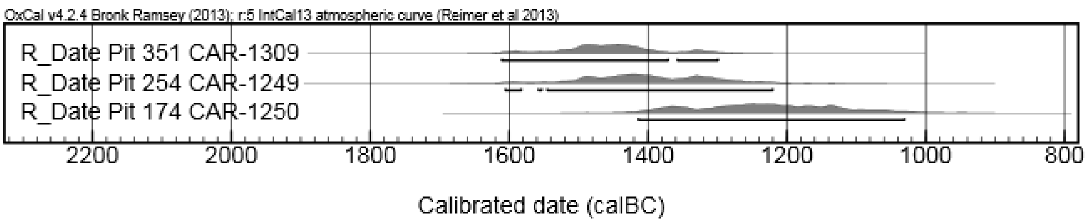

Figure 3.45: Calibrated radiocarbon dates from Pennant Melangell Church, Powys.

3.6 Summary of the chronological sequence (Table 3.2)

The middle of the fourth millennium BC in Wales saw the development of single pit grave burials. Five examples have been identified in Wales, with radiocarbon determinations which span from *c.* 3400-2700 cal BC (section 3.1.1). Middle

Neolithic pit graves contained inhumation burials (Four Crosses 5), cremation burials (Bryn Gwyn, Llandygai A and Lower Luggy), or both (Trelystan II).

Table 3.2: Summary of dates, site types, pottery types and burial types for each chronological period.

	Middle Neolithic	**Late Neolithic**	**Chalcolithic**	**Early Bronze Age**	**Middle Bronze Age**
Date range (BC)	3600-2900	2900-2400	2500-2200	2200-1700	1700-1200
Monument types	Pit grave Timber circle Stone arc	Penannular ditched enclosure Stone circle Henge Passage grave	Circular ditched enclosure Round cairn	Round barrow Burial cairn Cremation cemetery Timber circle Henge Pit circle Stone circle	Round barrow Burial cairn Cremation cemetery Standing stone Stone circle
Pottery types	Impressed Ware	Grooved Ware	Beaker	Beaker Food Vessel Collared Urn	Collared Urn Bucket Urn Barrel Urn
Burial deposit types	Inhumation Cremation	Cremation	Inhumation	Inhumation Cremation	Cremation

A tradition of monuments which appeared towards the end of the fourth millennium BC is the circular enclosure. Early examples include the *c.* 20m wide stone arc at Bryn Celli Ddu, dated to *c.* 3200-3000 BC, which preceded the construction of the passage grave by around 100-200 years (section 3.2.4). The cremation burial from Meusydd I, deposited against a timber post when the timber circle was erected, dated to the start of the third millennium BC (section 3.1.2). The radiocarbon evidence suggests that the tradition of circular enclosures in Wales persisted for more than 1500 years in Wales. Later examples include the *c.* 3000-2800 BC penannular ring ditch at Sarn-y-bryn-caled 2 (section 3.2.1), the *c.* 2900-2500 BC stone circles at Bryn Gwyn and Dyffryn Lane I (section 3.2.2), the *c.* 2700-2400 BC henge at Dyffryn Lane I (section 3.2.3), and the 98m wide circular ditched enclosure at Walton Court, constructed *c.* 2500-2300 BC (section 3.3.1). The construction of circular enclosures became more popular in the Early Bronze Age period, with at least eight examples of monuments constructed in this period in Wales, which include timber circles, stone circles and pit circles (section 3.4.3). Only one circular enclosure dates to the Middle Bronze Age period, the small *c.* 4m wide stone circle at Penmaenmawr 280 (section 3.5.4), which would suggest that the tradition of circular enclosures probably phased out around the middle of the second millennium BC in Wales.

The radiocarbon evidence suggests a hiatus in inhumation burials between *c.* 2900-2500 BC. After the Middle Neolithic tradition of single pit graves, inhumations re-appear within the mortuary record in the Chalcolithic period with the arrival of 'pre-fission' Beaker burials around the mid-third millennium BC (section 3.3.2). However, Beaker burials did not become a more established tradition until the 'fission' and 'post-fission' phases (*c.* 2200-1700 BC) (section 3.4.1.1). The 'fission' phase in the Early Bronze Age is also associated with major changes in funerary practices, when burial mounds (round barrows and burial cairns), which often contained multiple inhumation and/or cremation burials, became the dominant type of funerary monument (section 3.4.1). The fact that no clear chronological sequences could be identified between different phases of activity at most burial mounds would suggest that the majority of these monuments were constructed and used over a relatively short period of time, probably of no more than 100-200 years (section 3.4.1.3).

Radiocarbon dates indicate that cremation burials became the dominant type of burial deposit after the 23rd century BC (section 3.4.1.2). The tradition of cremation burials deposited in burial mounds carried on into the Middle Bronze Age period, although most monuments tended to represent simpler structures than in the Early Bronze Age period (section 3.5.1). Cremation cemeteries, a type of funerary site first developed in the Early Bronze Age period (section 3.4.2), also carried on up to the middle of the second millennium BC (section 3.5.2). However, the radiocarbon evidence suggests that the tradition of cremation burials became less popular around *c.* 1700-1500 BC, to be replaced by practices which involved the deposition of small token deposits of cremated bones, some in pits (section 3.5.2) and others associated with standing stones (section 3.5.3), after the middle of the second millennium BC in Wales.

Chapter 4: Materials and methods for the analysis of human bone deposits

The aim of this study was to define the character of funerary and ritual practices in Wales between 3600-1200 BC. In order to achieve this, human bone deposits were analysed to provide demographic data, which includes the minimum number of individuals represented in each burial deposit as well as their age and sex. The data gathered in the analysis was then used as part of a wider analysis of burial data to examine patterns between demographic data, burial modes and grave good associations (Chapter 5). Another aspect of the analysis aimed to define the character of cremation deposits in terms of bone weights, fragmentation levels, levels of skeletal representation and pyre technology data (based on the analysis of bone colours and fracture patterns) (Chapter 6). The next sections provide a description of the sample of human bone deposits examined in this analysis (section 4.1) as well as the methods used to record and analyse inhumations (section 4.2) and cremation deposits (section 4.3).

4.1 Materials

A review of the Historic Environment Record (HER) data (see introduction to Chapter 3) indicated that at least 876 human bone deposits have been uncovered from 529 excavated Middle Neolithic to Middle Bronze Age (MN-MBA hereafter) funerary and ritual monuments in Wales since the antiquarian period. However, 619 (70.7%) deposits could not be examined as part of this study for a number of reasons: firstly, deposits excavated in the antiquarian period and early 20th century held by private collectors have often been lost, or in many cases no mention was made in the excavation report of where the deposits were held (n=515 deposits); secondly, some deposits listed in museum catalogues could not be located at the time the museums were visited (n=51 deposits); and thirdly, several deposits were only represented by small fragments of degraded bones which were too fragile to be examined (n=53 deposits).

257 bone deposits were analysed as part of this study, which include 31 inhumations and 226 cremation deposits. Each bone deposit was given a

unique ID number in order to clearly identify the deposits which have been examined by the author (ID No. 1-257 in Appendix F). The skeletons and cremation deposits examined came from 98 excavated MN-MBA Welsh monuments held in museums, Record Offices and universities in England and Wales. Although this sample represented less than a third (29.3%) of excavated bone deposits (see above), it contained all of the deposits which could be located in museums, Record Offices and universities in England and Wales at the time the study was conducted.

4.2 Inhumations

Human bone deposits were analysed based on the standards established by the British Association for Biological Anthropology and Osteoarchaeology (BABAO) in conjunction with the Institute of Field Archaeologists (IFA) (Brickley and McKinley 2004). The next sub-sections provide descriptions of the methods used to analyse and record skeletal data for inhumations.

4.2.1 Record sheets

Standardised paper record sheets were used to ensure consistency in data collection throughout the analysis. These included schematic inventory diagrams from Ubelaker (1999: Appendices 3a and 5a) and sex assessment and age estimation record sheets from the Biological Anthropology Research Centre (BARC), University of Bradford, some of which were modified for the purposes of this study.

The record sheets used for the analysis of inhumations include skeletal and dental inventory sheets for non-adults and adults, age estimation sheets for non-adults and adults and a sex assessment record sheet for adults (Appendix C). A preliminary assessment of each skeleton was made before the analysis in order to identify the appropriate inventory sheets to be used. For skeletons with unfused or partially fused epiphyses and/or deciduous or mixed dentition, schematic inventory sheets for non-adults were used. Adult inventory sheets were used for skeletons with fully fused epiphyses and fully erupted permanent dentition.

4.2.2 Preservation

Surface preservation was recorded with the grading system outlined in McKinley (2004b: 16). This method, developed especially for British skeletons, scores the degree of post-mortem abrasion and erosion on the bone surfaces from 0 to 5+ (Table 4.1). The grade of surface preservation was noted on the first record sheet for each skeleton analysed. The degree of completeness, recorded as <25%, 25-50%, 50-75% or 75-100% on the summary table, was based on a visual assessment of the schematic skeletal and dental inventory sheets for each skeleton.

Table 4.1: Description of the scores which grade the severity of post-mortem abrasion and erosion on bone surfaces (Taken from McKinley 2004b: 16).

Score	*Description*
0	Surface morphology clearly visible with fresh appearance to bone and no modifications
1	Slight and patchy surface erosion
2	More extensive surface erosion than grade 1 with deeper surface penetration
3	Most of bone surface affected by some degree of erosion; general morphology maintained but detail of parts of surface masked by erosive action
4	All of bone surface affected by erosive action; general profile maintained and depth of modification not uniform across whole surface
5	Heavy erosion across whole surface, completely masking normal surface morphology, with some modification of profile
5+	As grade 5 but with extensive penetrating erosion resulting in modification of profile

The preservation level of each inhumation was recorded as part of this analysis for two reasons. Firstly, this data will help to assess the condition of skeletons from the period examined in this study (3600-1200 BC). The poor bone survival rates in Wales due to acidic soil conditions are frequently seen as to limit discussions on burial practices for this period (e.g. RCAHMW 1997: 72-73). However, this study aimed to examine whether the analysis of all skeletons in museum collections as a whole sample could provide useful data on burial practices. Secondly, the preservation level of each skeleton will have a major impact on the techniques which can be used for age and sex assessments. As the reliability of techniques for sex assessments has been shown to be affected by bone preservation levels (Meindl *et al* 1985a), sex assessments in poorly preserved skeletons were made with caution.

4.2.3 Sex assessment

Sexual dimorphism in the human skeleton refers to differences in physical forms between males and females (Chamberlain 2006: 92-93). Differences in the size, robusticity and morphology between sexes are caused by hormonal changes which follow puberty (Mays and Cox 2000). Males tend to have larger and more robust bones with more prominent muscles attachments than females due to the longer duration of prepubertal bone development as well as higher rates of hormone-related muscle and bone growth (Rogol *et al* 2000: 524). As males and females reach sexual maturity at different rates and times, sex assessments based on the visual examination of sexually dimorphic traits in non-adult skeletons are considered unreliable (Brickley 2004b, Scheuer and Black 2000: 15). For this reason, sex assessments on non-adult skeletons were not undertaken as part of this study. Skeletons were not sexed when epiphyses were unfused or partially fused (except for ‘late union’ epiphyses: section 4.2.4.1b) and/or when deciduous or partially formed permanent teeth (except for third molars) were identified (section 4.2.4.1).

Several visual methods have been developed to score sexually-dimorphic traits on the adult skeleton. Two skeletal regions were used for sex assessments, the pelvis (os coxae and sacrum) and skull (cranium and mandible). These elements were selected as they are the most reliable indicators of sex (Chamberlain 2006: 95, Mays and Cox 2000). As the skeletons examined in this study were often fragmented and incomplete (section 5.2.2), as many sexually-dimorphic traits as possible were examined on the pelvis and skull of each individual. Each trait was scored separately as female (F), possible female (?F), indeterminate (I), possible male (?M), male (M) and non-observable (N/A) on the record sheets.

The examination of sexually dimorphic traits on both the pelvis and skull as part of a multi-factorial analysis provide more accurate results – 97% on a sample from the American Hamann-Todd Collection (Meindl *et al* 1985a) and 98% on the 18th-19th century Spitalfields Collection, London (Molleson and Cox 1993: 206) – than sex assessments based on individual traits (Mays and Cox 2000). The final sex assessment for each skeleton was therefore based on a considered evaluation of the scores from the most reliable traits on the pelvis and the skull. If the majority of traits examined were recorded as indeterminate, the overall sex assessment was noted as indeterminate. In cases where discrepancies occurred between the scores for pelvic and skull traits, the pelvic scores were given more weight in the overall sex assessment.

Several metrical methods have also been developed for sex assessments in skeletons based on measurements from sexually-dimorphic skeletal elements; however these methods are population-specific (Mays and Cox 2000). Methods developed on British collections involve measurements from the clavicle, scapula and femur (Brothwell 1981: 61, Parsons 1914, Steel 1962). However, the use of metrical techniques on the skeletons examined in this study was found to be impractical as the majority of bones were either too fragmented or the bone surfaces too eroded (especially the extremities of long bones) (section 5.2.3). As a result of this, no sex assessments based on metrical data were made in this analysis.

4.2.3.1 Pelvic morphology

Morphological differences in the pelvis arise from functional purposes, as the higher and narrower male pelvis is more suitable to locomotion and the shorter and wider female pelvis is adapted to parturition (Chamberlain 2006: 94, Mays and Cox 2000). Although sexual dimorphism in the pelvis begins in the foetal development stage, these differences become more pronounced in the adolescent growth spurt (Scheuer and Black 2000: 243). Pelvic dimorphism is caused by differential development patterns in which the female pelvis grows in width through a lateral migration of the ischia, while the male pelvis grows in height (Coleman 1969, LaVelle 1995). This leads to morphological differences in the shape and morphology of the ilia, ischia, pubic bones and sacrum between males and females which can be examined as indicators of sex.

Phenice (1969) identified three traits present only on female pubic bones: the ventral arc, the sub-pubic concavity and a ridge on the medial aspect of the ischiopubic ramus (Figure 4.1; Budinoff and Tague 1990, Phenice 1969). Accuracy rates reported from tests on documented collections for these traits are variable. Observations based on the presence or absence of these features provided correct sex assessments in between 88-96% of skeletons examined (Kelley 1978, Sutherland and Suchey 1991, Ubelaker and Volk 2002), although lower accuracy rates (between 59-83%) were reported on smaller samples from Europe (MacLaughlin and Bruce 1990) and America (Lovell 1989). In terms of individual traits, MacLaughlin and Bruce (1990) suggested that the sub-pubic concavity was the most reliable (72.1-87.1% accuracy), while Rogers and Saunders (1994) found that the ventral arc provided the most accurate results (86.9% accuracy). It has been suggested that the simple scoring based on the presence/absence of these traits does not account for the variability between the typically female and typically male forms (Klales *et al* 2012, MacLaughlin and Bruce 1990). The method developed by Klales *et al* (2012), which involves observations of Phenice's three traits on a five-point scale (Figure 4.2) and calculation of the most probable sex assessment based on linear discriminant functions, was used as part of this analysis. This technique was found to be 94.5% accurate in the identification of sex on skeletons from American reference collections (Klales *et al* 2012).

The greater sciatic notch, located between the posterior inferior iliac spine and the ischial spine, was also examined as a sex indicator (Hager 1996, Singh and Potturi 1978). This trait was scored on a 5-point scale from 1 (the wider and shallower typical female form) to 5 (the narrower and deeper typical male form) (Figure 4.3). The greater sciatic notch is considered a less reliable sex trait, with accuracy rates between 80-84.7% on documented samples (Rogers and Saunders 1994, Walker 2005). Differences in the morphology of the greater sciatic notch have been observed between different age groups and populations. Walker (2005) noted that younger individuals displayed wider sciatic notches than older individuals, and that the American sample was more sexually-dimorphic than the British sample, probably due to environmental factors.

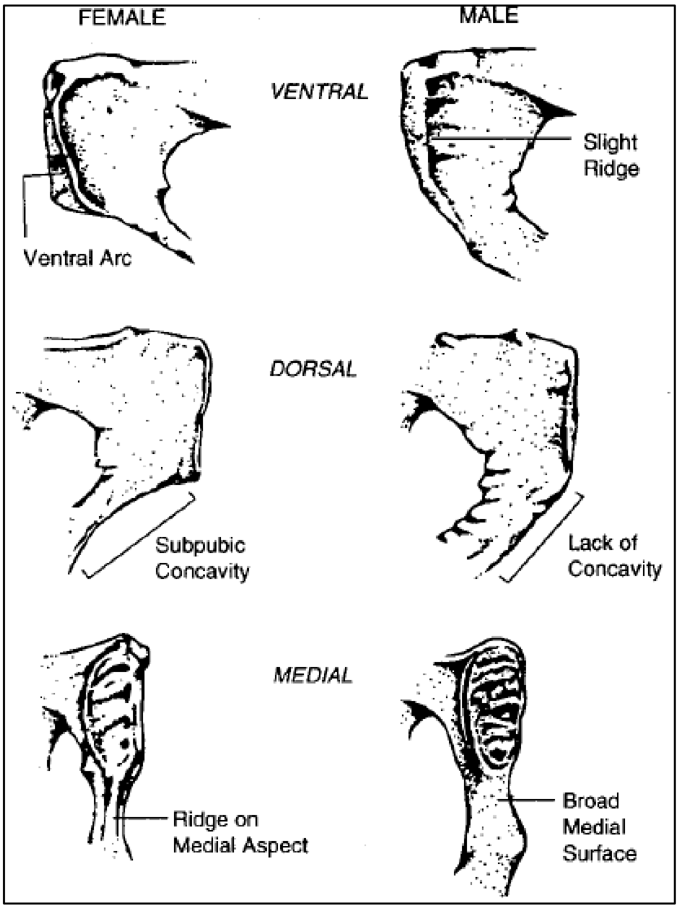

Figure 4.1: Phenice's three traits on the pubic bone: the ventral arc, subpubic concavity and ischiopubic ramus (Taken from Buikstra and Ubelaker 1994: 17).

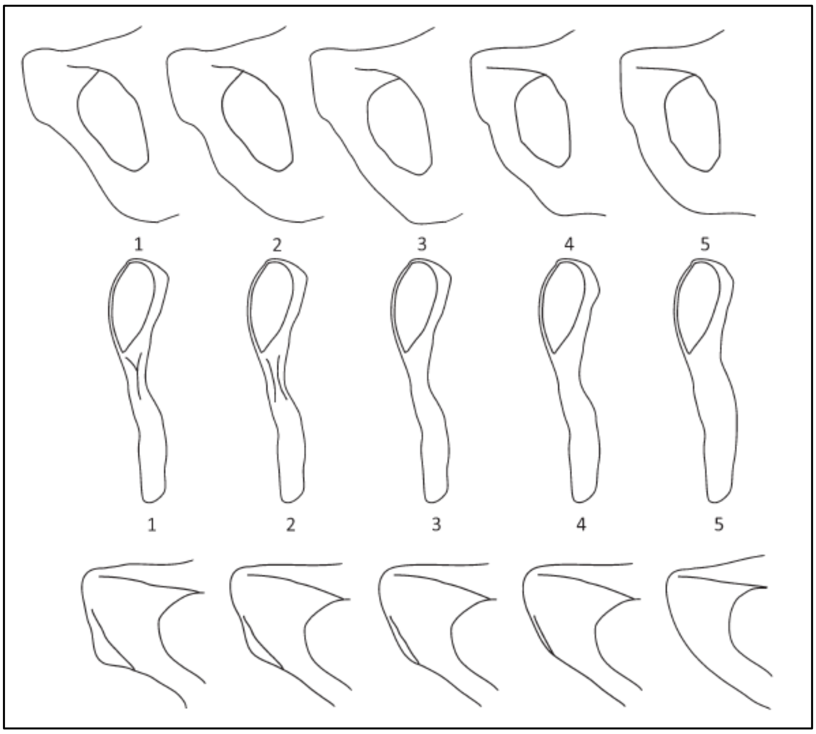

Figure 4.2: Five-point scale system used to score the morphologies of the subpubic concavity (top), ischiopubic ramus (middle) and ventral arc (bottom) (Taken from Klales *et al* 2012: 107).

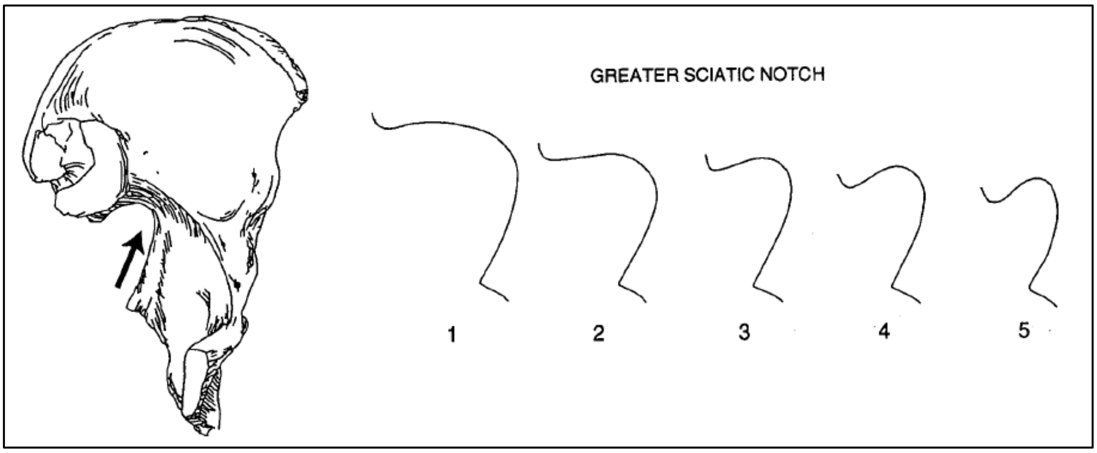

Figure 4.3: The five-point scale system used to score the morphology of the greater sciatic notch from 1 (female) to 5 (male) (Taken from Buikstra and Ubelaker 1994: 18).

Other features examined on the bony pelvis include the preauricular sulcus which tends to be absent or small in males and more developed in females (Buikstra and Ubelaker 1994: 19, Novak *et al* 2012). Sacral morphology was also examined, as the sacrum is longer and narrower in males and shorter, broader and with wider alae in females (Bruzek 2002, Flander and Corruccini 1980). Both these traits were found to be reliable sex indicators, with accuracy rates of 94.1% for sacral morphology and 91.6% for the preauricular sulcus on a documented collection from Canada (Rogers and Saunders 1994). Other skeletal traits which require the examination of the complete pelvis such as the shape of the pelvis inlet, true pelvis and obturator foramen and orientation of the acetabulum (Ferembach *et al* 1980, White *et al* 2011: 415) could not be used in this analysis as all the pelves examined were fragmented.

4.2.3.2 Skull morphology

Sexual dimorphism on the skull arises from differences in bone and muscle development rates between males and females (Chamberlain 2006: 95). The longer growth period in males leads to the development of more prominent facial features and more robust muscle attachments whilst female skulls tend to retain their adolescent form (Mays and Cox 2000, Rogers 2005). Skull traits are considered less reliable for sex assessments as, unlike pelvic traits for which differences between males and females arise from functional purposes, dimorphism on the skull relates to differences in bone size and muscle mass (Mays 2010: 40). As some populations are larger and more robust than others, the expression of sexual dimorphism on the skull is therefore population-specific (Spradley and Jantz 2011, St Hoyme and İşcan 1989, Walrath *et al* 2004). It has also been suggested that age can have an impact on the morphology of skull traits, as younger males may retain more adolescent gracile features whilst post-menopausal women may develop masculine features (Walker 1995). However, a recent study on two British documented collections, St Bride's and Christ Church Spitalfields in London, suggests that age-related morphological changes to the craniofacial skeleton probably have a limited impact on the reliability of cranial traits in sex assessments of older individuals (Nikita 2014).

Five of the traits examined on the skull include the nuchal crest, mastoid process, supra-orbital margin and supra-orbital ridge/glabella on the cranium and the mental eminence on the mandible (Buikstra and Ubelaker 1994: 19-20). Based on a visual assessment of their morphology and robusticity, these traits were scored on a five-point scale system from 1 (minimal expression typical of the female form) to 5 (the larger and more robust expression typical of the male form) (Figure 4.4). Whilst the nuchal crest, mastoid process and supra-orbital ridge are more prominent in males than females, the mental eminence is less sexually-dimorphic in British assemblages (Brickley 2004a, Brothwell 1981: 59). Dimorphism of the mental eminence was examined based on the illustration developed especially for British mandibles (Figure 4.5) and scored as male or female (Brickley 2004a).

Other cranial features examined include the forehead, which is vertical in profile in females and more rounded in males, frontal and parietal bosses which are more defined on the female cranium and the posterior zygomatic arch which extends beyond the external auditory meatus with a well-defined ridge in males (Brothwell 1981: 59, Rogers 2005). The orbits in males tend to be squarer and lower whilst orbits in females are rounder and higher (Rogers 2005). The male mandible tends to a have a broader ascending ramus with more developed flares in the gonial region and a gonial angle at approximately 90°, whilst females have a smaller ramus, with a less pronounced gonial flare and a gonial angle greater than 90° (Brothwell 1981: 61, Kemkes-Grottenthaler *et al* 2002).

The dental arcade of the maxilla is larger, broader and U-shaped in males and smaller, more parabolic in females (Rogers 2005).

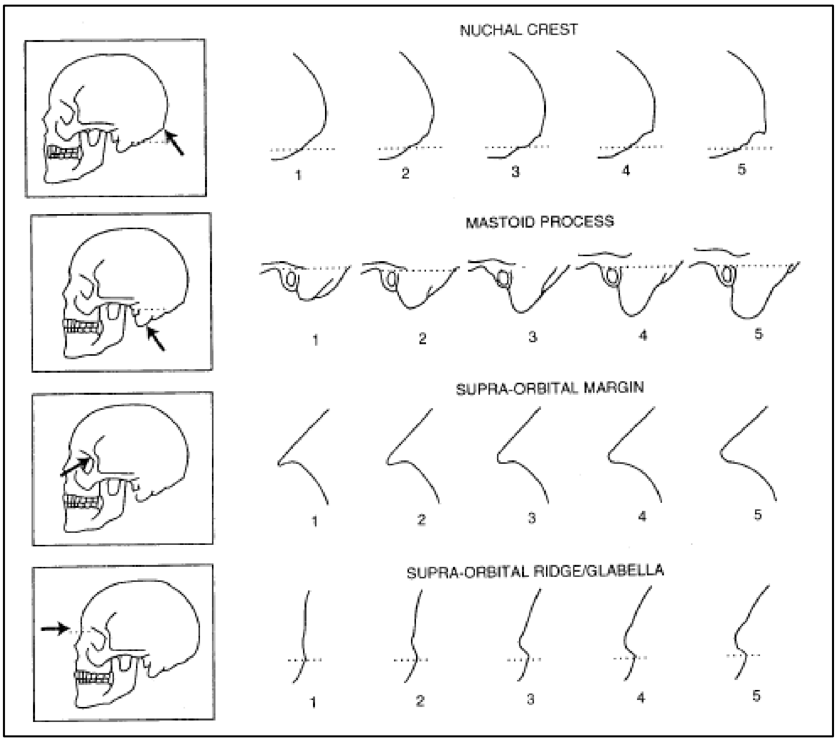

Figure 4.4: The five-point systems used to score the morphologies of the nuchal crest, mastoid process, supra-orgital margin and supra-orbital ridge (Taken from Buikstra and Ubelaker 1994: 20).

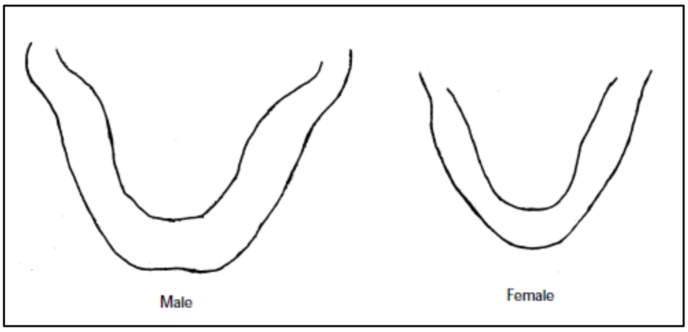

Figure 4.5: Typical differences between male and female British mandibles (Taken from Brickley 2004a: 24).

Tests on documented collections suggest that sex assessments based on traits on the cranium and mandible are between 80-92% accurate (Meindl *et al* 1985a, Rogers 2005, St Hoyme and İşcan 1989, Walrath *et al* 2004, Williams and Rogers 2006). Based on the analysis of two samples from North American reference collections, the St. Thomas' Cemetery Collection in Canada and the William M. Bass Donated Skeletal Collection in the USA, the most reliable traits on the skull are the mastoid process, supra-orbital ridge, posterior zygomatic arch, nuchal crest and mandible gonial angle, whilst palate shape, supra-orbital margin, orbit shape, forehead shape, frontal and parietal eminences and mandible gonial flare are the least reliable (Rogers 2005, Williams and Rogers 2006). More weight was given to the most reliable cranial traits (mastoid process, supra-orbital ridge, posterior zygomatic arch, nuchal crest and mandible gonial angle) in the final sex assessment.

4.2.4 Age-at-death estimation

Age-at-death estimations were based on the examination of the physiological state of skeletal and dental features (Garvin *et al* 2012). These were used as indicators of the biological age of a skeleton based on the developmental and maturation stages reached by each individual (Cox 2000, Scheuer and Black 2000). However, as a number of factors may influence individual developmental and maturation rates, such as genetic and environmental factors, biological age can only provide an approximation of the chronological age-at-death (defined as the amount of time since birth) of an individual (Table 4.2; Garvin *et al* 2012, Nawrocki 2010).

Table 4.2: Age categories used in this study (Modified from BARC, University of Bradford).

Age group	*Age range*
Foetus	Before birth
Infant	1 month – 12 months
Early Childhood	1 – 6 years
Late Childhood	7 – 12 years
Adolescent	13 – 17 years
Young adult	*c.* 18 – 25 years
Middle Adult	*c.* 26 – 40 years
Older adult	*c.* >40 years

Age-at-death estimations in non-adults were based on the analysis of patterns of bone growth and maturation (Saunders 2008). As bones grow and reach skeletal maturity in a sequential pattern, the analysis of the skeletal and dental development stages reached at the time of death can be used as an indicator of biological age in non-adults (Chamberlain 2006: 98, Scheuer and Black 2000:

4). Once skeletal maturity is reached, the adult skeleton is constantly affected by morphological changes as bone tissues remodel and degenerate (Chamberlain 2006: 98). Age-at-death estimation for adult skeletons focused on the examination of the nature and severity of age-related morphological changes to a number of semi-mobile and fixed joints (Cox 2000). Multiple features were examined for age estimations in non-adults and adults (methods described in sections 4.2.4.1a and 4.2.4.1b), and each skeleton examined was classified under one of eight broad age categories on the basis of the results obtained (Table 4.2). However, in cases where an insufficient number of skeletal elements were present to provide more precise age estimations, skeletons were classified as 'non-adult' or 'adult'. The term 'non-adult' was used in this study in order to refer to skeletons which had not reached full skeletal maturity (except for 'late union' epiphyses).

4.2.4.1 Non-adult age-at-death estimation

Bone growth occurs at primary (for long bone diaphyses, cranium, pelvis, vertebrae, carpal and tarsal bones) and secondary (extremities of long bones) ossification centres (Scheuer and Black 2000: 18). Growth plates, located between the primary and secondary centres, are zones where cartilaginous cells are remodelled into cancellous bone, a process which leads to an increase in bone size and length (Scheuer and Black 2000: 26). Longitudinal bone growth ends with the fusion of the epiphyseal plates to the metaphyseal surface of the diaphysis (Scheuer and Black 2000: 29). Four broad processes are associated with the development of dental tissues: initiation of crown mineralization, crown completion, tooth eruption from the alveolar jaw and root completion (Scheuer and Black 2000: 160). Data collected on diaphyseal lengths, timing of epiphyseal fusion and rates of teeth development and eruption from modern populations and documented collections are used to estimate age-at-death in non-adult skeletons (Chamberlain 2006: 101, Schaefer *et al* 2009: xii).

Age-at-death estimations from the dentition are considered more accurate than those based on skeletal development (Saunders 2008, Scheuer and Black 2000: 12). This is because several factors are known to have a major impact on the rates of skeletal development and maturation, from biological (sex-related hormonal differences) and environmental factors such as health, diet and activity level (Scheuer and Black 2000: 27-28). In contrast, variations in the rates of dental development and eruption between sexes and environments (Scheuer and Black 2000: 152) do not appear to have a significant impact on age assessments (Liversidge 2009, Liversidge and Molleson 2004, Liversidge *et al* 2010). The final age estimation for non-adults (recorded on the non-adult age estimation sheet) was based on combined observations on the patterns of dental formation, eruption and epiphyseal fusion. If age estimations from these two methods did not match, the age estimation based on teeth was used as it was more likely to provide the most accurate results.

Dental development and eruption

Several methods have been developed to estimate age-at-death from the dentition of non-adults which are based on the rates of dental development or on the patterns of dental eruption from the alveolar bone (described in Liversidge *et al* 2010 and Scheuer and Black 2000: 158-162). Techniques based on dental development, which involve the visual examination of the rates of crown mineralization and root development on individual teeth, provided the most accurate results on documented collections (Liversidge and Molleson 2004, Liversidge *et al* 2010, Saunders *et al* 1993). However, as no radiographs were taken in this analysis to examine unerupted teeth in the alveolar bone due to time constraints and access to equipment in museums, these methods could not be used. In cases where tooth development in the alveolar bone cannot be examined, atlases based on the rates of dental eruption can also be used to provide reliable age estimations (Liversidge 1994, Whittaker 2000).

Age-at-death estimations from the dentition were based on the atlas of human tooth development and eruption (London Atlas) published by AlQahtani *et al* (2010) (Figure 4.6). The London Atlas was developed on two British documented collections, the Spitalfields collection at the Natural History Museum in London and the Maurice Stack's collection at the Royal College of Surgeons of England (AlQahtani *et al* 2010). Tests on European documented skeletal collections and dental radiograph archives have shown that the London

Atlas is more accurate than other dental charts for age-at-death estimations (AlQahtani *et al* 2014). In this study, teeth were macroscopically examined and recorded on the dental inventory sheet as NE (not erupted), PE (partially erupted) and E (erupted). A visual comparison was then carried out between the patterns of teeth eruption recorded on each skeleton and the dental atlas in AlQahtani *et al* (2010). The age-at-death estimation (reported as age midpoints) obtained from this analysis was then recorded on the dental inventory sheet.

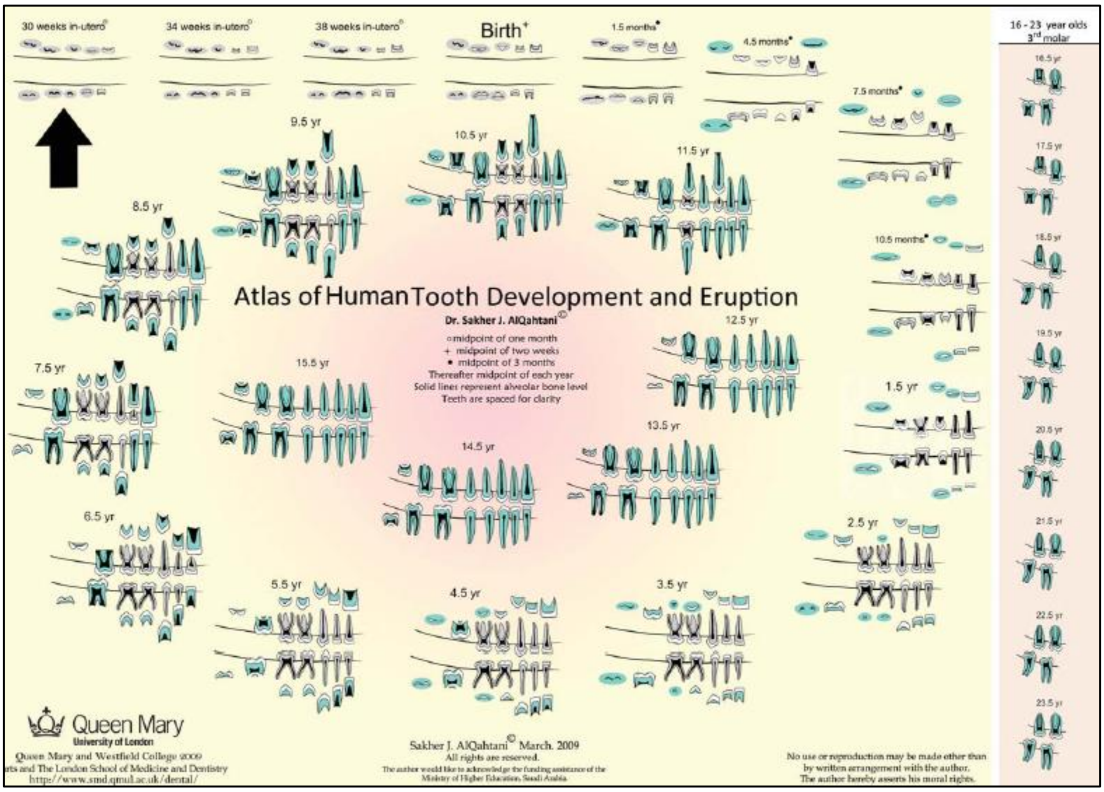

Figure 4.6: Atlas of human tooth development and eruption (Taken from AlQahtani *et al* 2010: 485).

Epiphyseal fusion

The stages of epiphyseal fusion were recorded for each epiphysis present on the non-adult skeletons examined. Each epiphysis was recorded in a table on the age estimation sheet as U (unfused), PF (partially fused), F (fused) and not observable (N/A). Age estimations from the overall pattern of epiphyseal fusion throughout the skeleton were based on the age ranges of epiphyseal union published in Schaefer *et al* (2009). These age ranges were established based on data compiled from multiple studies on the rates of epiphyseal union in modern populations and documented collections (Schaefer *et al* 2009: xii). As females reach sexual maturity before males, the rates of epiphyseal fusion vary between the sexes (Mays and Cox 2000, Scheuer and Black 2000: 4). However, as non-adult skeletons were not sexed in this analysis, the age ranges for epiphyseal fusion in males and females were combined (Schaefer *et al* 2009: 354-355).

Age-at-death can also be estimated in non-adult skeletons from the maximum size of several bones such as cranial bones, clavicle, scapula and diaphyses of long bones (Schaefer *et al* 2009). However, age assessments based on metrical data are considered less reliable as several factors such as the environment, diet and diseases may disrupt bone growth (Scheuer and Black 2000: 27-28, White *et al* 2011: 391). For this reason, and because most of the bones examined were fragmented, age estimations from metrical data were not undertaken as part of this study.

4.2.4.2 Adult age-at-death estimation

Four types of skeletal indicators were used for age-at-death estimations on adult skeletons: the fusion of 'late union' epiphyses, the eruption of third molars, morphological changes to semi-mobile and fixed joints (pubic symphysis, iliac auricular surface and cranial sutures) and dental attrition.

The majority of age-at-death estimation methods for adult skeletons are based on the assumption that the rates of age-related changes are constant across populations (Schmitt *et al* 2002). However, significant variability in the rates of degenerative changes has been identified within and between populations (Buk *et al* 2012, Kimmerle *et al* 2008, Konigsberg *et al* 2008, Schmitt *et al* 2002). Mean age estimates for each method will reflect the age structure of the reference population, but not necessarily of the target population examined (Bello *et al* 2006). Intra- and inter-population variability in senescence rates is the main reason why age estimation methods in adult skeletons are considered less reliable than methods used for non-adult skeletons (Schmitt *et al* 2002).

A multi-factorial approach is considered the most reliable technique on the basis that the use of multiple age indicators on each skeleton helps to control for variation associated with individual methods (Baccino *et al* 1999, Bedford *et al* 1993, Lovejoy *et al* 1985a, Martrille *et al* 2007). However, several studies on documented collections suggest that this method leads to the systematic underestimation of the age of younger individuals and overestimation of the age of older adults (Martrille *et al* 2007, Milner and Boldsen 2012, Molleson and Cox 1993: 169, Saunders *et al* 1992). In order to increase the accuracy of the multi-factorial approach, it is recommended to examine multiple age indicators on each skeleton, but to select the most accurate methods for each particular age group in the final age estimation (Bedford *et al* 1993, Martrille *et al* 2007, Saunders *et al* 1992, Schmitt *et al* 2002). Based on a literature review of age estimation methods for skeletal remains, the most accurate methods include 'late union' epiphyses and third molar eruption for younger individuals (18-30 years old), the pubic symphysis for younger (18-30 years old) and older (>40 years old) individuals and the auricular surface for middle and older individuals (>30 years old).

As many age indicators as possible were examined on each skeleton analysed in this study. The results from individual methods were noted on the adult age estimation record sheet. Based on the age spans associated with the most accurate methods for each age group, each skeleton was then classified under an age category (Table 4.2). As only a few age indicators were found to be preserved on each skeleton due to taphonomic processes, and due to the imprecision of adult ageing, broad age categories were used to increase accuracy: young adult (*c.* 18-25 years old), middle adult (*c.* 26-40 years old) and older adult (*c.* >40 years old).

Epiphyseal fusion

Epiphyses which fuse towards the end of skeletal maturation are useful age indicators in adults between 18-30 years old (Cunha *et al* 2009, Scheuer and Black 2000: 12). These 'late union' epiphyses include sacral vertebrae, the medial clavicle, the ischial tuberosity, the iliac crest and the sternum (sternebrae) (Schaefer *et al* 2009: 354). As for non-adult skeletons, the stages of epiphyseal union on each of these epiphyses were recorded in a table on the adult age estimation sheet as U (unfused), PF (partially fused), F (fused) and not observable (N/A). Age estimations from the pattern of 'late union' epiphyseal fusion were based on the age ranges in Schaefer *et al* (2009). The age range associated with sacral fusion was extended to 34 years old based on recent data on epiphyseal fusion rates in European documented collections (Belcastro *et al* 2008, Ríos *et al* 2008).

Third molar development and eruption

The pattern of development and eruption of permanent third molars is another indicator used to age younger individuals. Permanent molars generally erupt between the ages of 17-23 years (AlQahtani *et al* 2010). The patterns of crown and root development (if visible due to taphonomic damage to the alveolar bone) and eruption of third molars were recorded for each skeleton on the adult dental inventory sheet. However, as significant variability has been recorded in the rates of third molar development and eruption, combined with the fact that third molars are frequently congenitally absent (Mincer *et al* 1993), age estimations based on third molars were only made in conjunction with other age estimation methods.

Pubic symphysis

Age estimations from the pubic symphysis were based on the Suchey-Brooks method (Brooks and Suchey 1990). This method, developed on a sample of autopsied cadavers of mixed ethnicities from the USA, involves the visual examination of age-related morphological changes to the surface of the pubic symphysis and classification into six phases (Figure 4.7), each of which is associated with an age range (Brooks and Suchey 1990: 233).

Two main criticisms have been raised on the Suchey-Brooks method. Firstly, the age spans associated with each phase are too broad to provide useful age estimations (Cox 2000, Mays 2010: 64). Saunders *et al* (1992) argued that the majority of pubic symphyses from the 19th century St. Thomas' cemetery collection from Canada fell within the estimated age ranges simply due to the wide age spans associated with each phase, even though high levels of inter-observer errors were also recorded. Secondly, significant differences in the rates of age-related degenerative changes to the pubic symphysis have been identified between target populations and the reference sample used by Brooks and Suchey (1990). A number of studies on autopsied cadavers and documented skeletal collections have shown that, while the first morphological changes (associated with phases 1 and 2) may occur earlier, later degenerative changes (associated with phases 3-6) may appear later than expected, either within or between populations (Buk *et al* 2012, Hoppa 2000, Kimmerle *et al* 2008, Lottering *et al* 2013, Sarajlić and Gradaščević 2012, Saunders *et al* 1992, Sinha and Gupta 1995). As a result, methods developed and used on specific populations tend to perform better than methods based on assemblages of mixed ethnicity (Berg 2008, Buk *et al* 2012, Godde and Hens 2012, Kimmerle *et al* 2008, Konigsberg *et al* 2008, Schmitt *et al* 2002).

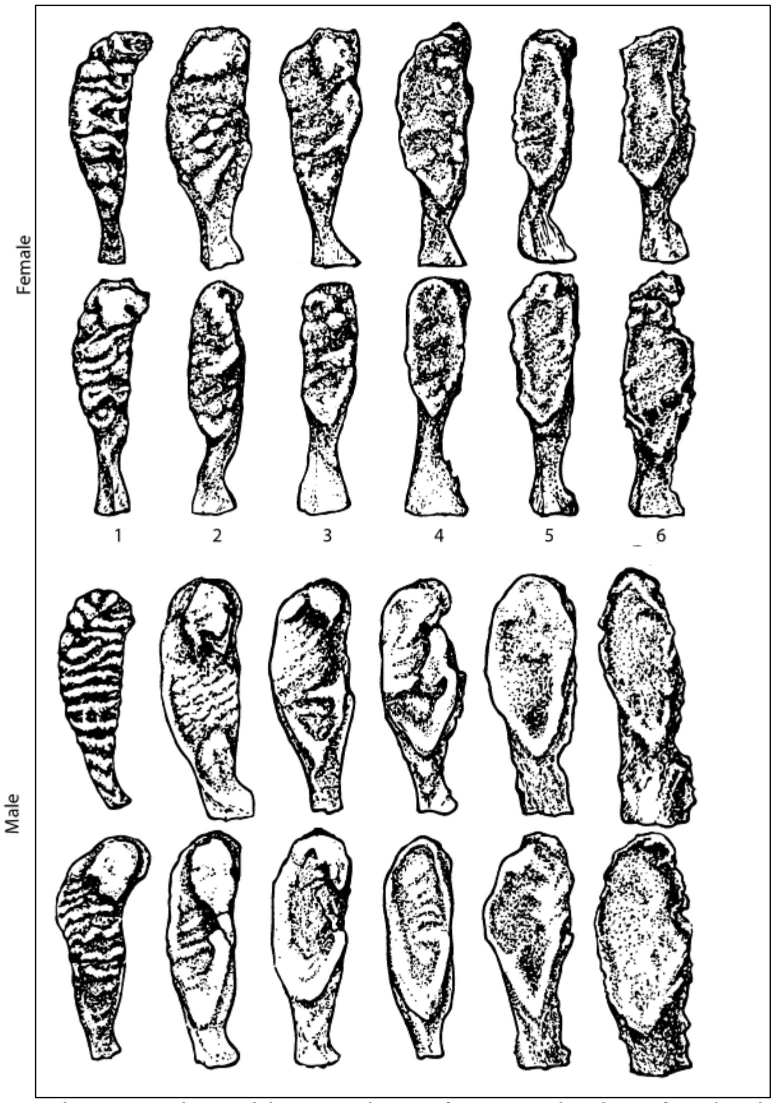

Figure 4.7: The Suchey-Brooks pubic symphyseal stages for females (top) and males (bottom) (Taken from White *et al* 2011: 398).

Saunders *et al* (1992) suggested that pubic symphyseal morphology may at best be useful to differentiate between younger and older individuals. Tests on documented collections have confirmed that phases 1 and 2 are the most reliable phases of the Suchey-Brooks method (Baccino *et al* 1999, Fleischman 2013, Martrille *et al* 2007, Saunders *et al* 1992). As such, the presence of ridges and furrows on the symphyseal surface, ossific nodules (without a well-developed symphyseal rim) and lack of a dorsal plateau indicate that the individual was probably young (<30 years old). At the other end of the spectrum, symphyses with the most extensive types of degenerative changes – complete loss of symphyseal rim, presence of micro- and macro-porosity on the symphyseal face and crenulation variants on the superior-ventral aspect – are mostly found in older individuals (Hartnett 2010, Milner and Boldsen 2012). Although the rates at which these changes occur are variable, these late morphological changes do not appear in individuals younger than 50 years old (Berg 2008, Kimmerle *et al* 2008, Hartnett 2010, Milner and Boldsen 2012). The pubic symphyses of individuals examined as part of this analysis which displayed typical 'young age' traits (*c.* <30 years old) or 'old age' traits (*c.* >40 years old) were therefore used for age estimations. Despite the limitations associated with the Suchey-Brooks method, it provides one of the most reliable techniques for age estimations in adult skeletons, especially if wide age categories are used (Baccino *et al* 1999, Martrille *et al* 2007, Merritt 2013, San Millán *et al* 2013).

Auricular surface

As with the pubic symphysis, the morphology of the iliac auricular surface, which forms the lateral surface of the sacro-iliac joint, is constantly remodelled (Chamberlain 2006: 108). Several techniques have been developed for age estimations on the basis that the nature and extent of these morphological changes occur in a sequential manner through life. Two methods were used for age estimations from the auricular surface: 1) the Lovejoy *et al* (1985b) method in which the overall morphology of the auricular surface is visually assessed and matched to the closest photograph from a phase-based system (Figure 4.8) and 2) the Buckberry-Chamberlain (2002) method in which the cumulative score, obtained from five individual scores which rate the severity and extent of morphological changes (transverse organisation, surface texture, micro- and macro-porosity and apical changes) is associated with an age span (Buckberry and Chamberlain 2002: 237).

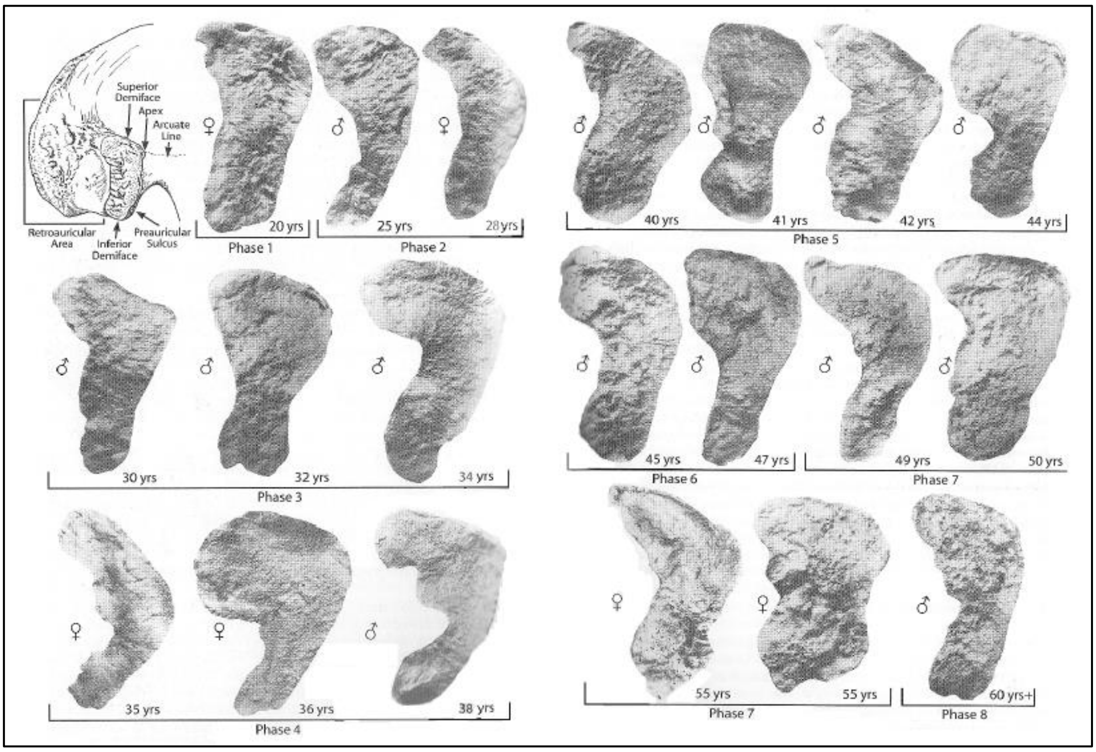

Figure 4.8: The Lovejoy *et al* (1985b) phase-based system for age estimations based on the morphology of the auricular surface (Taken from White *et al* 2011: 401).

Tests on several North American and European documented collections suggest that the reliability of the Lovejoy *et al* (1985b) method is variable. Most studies found that it led to the systematic underestimation of the age of individuals over 35-49 years old (Bedford *et al* 1993, Hens *et al* 2008, Murray and Murray 1991, Saunders *et al* 1992). If age spans are expanded to include the ranges adjacent to the estimated phase, the accuracy of the Lovejoy *et al* (1985b) method increases to only 41-54% for middle and older individuals (25-60 years old) (Martrille *et al* 2007, Osborne *et al* 2004). Furthermore, age estimations for individuals over 60 years old are still underestimated (Hens *et al* 2008, Milner and Boldsen 2012). However, this issue is unlikely to affect the accuracy of age estimations based on the Lovejoy *et al* (1985b) method in this analysis as older age ranges have been combined into one (>40 years old).

One problem raised on the reliability of the auricular surface as an indicator of age is the issue of population specificity. As with the pubic symphysis, the rates at which age-related changes appear on the auricular surface vary between populations (Buk *et al* 2012, Rissech *et al* 2012, Schmitt *et al* 2002). The score-based system in Buckberry and Chamberlain (2002) developed on the Spitalfields Collection, London, is more closely related spatially to the skeletons examined in this study than the two American samples used by Lovejoy *et al* (1985b). However, Mulhern and Jones (2005) found that age estimations for individuals between 20-49 years old from the American Terry Collection were less accurate than those based on the Lovejoy *et al* (1985b) method. On the other hand, for individuals older than 60 years, the Buckberry-Chamberlain method is more reliable, although older individuals were under-aged (Hens and Belcastro 2012, Rissech *et al* 2012). Furthermore, as no significant differences were found between several of the stages, it was suggested that this method should only be used as a broad indicator of age based on three auricular surface stages (Falys *et al* 2006, Hens and Belcastro 2012). The accuracy of skeletal age-at-death estimations based on the auricular surface increases significantly if wider age categories are used (Martrille *et al* 2007, Merritt 2013, San Millán *et al* 2013).

Auricular surface morphology was examined based on both the Lovejoy *et al* (1985b) and Buckberry-Chamberlain (2002) methods as part of the skeletal analysis. The results and estimated age spans (based on the modified age ranges in Osborne *et al* 2004: 5 and Falys *et al* 2006: 511) were noted on the adult record sheet.

Cranial suture closure

The Meindl and Lovejoy (1985) method was used to estimate age-at-death based on cranial suture fusion. Ten sites were examined on the ectocranial surface of the cranium (Figure 4.9) and scored on a four-point scale as open (score 0), minimally closed (score 1), significantly closed (score 2) or completely obliterated (score 3). The cumulative scores were then used to provide estimated age spans from vault suture closure and lateral-anterior suture closure (Meindl and Lovejoy 1985: 63).

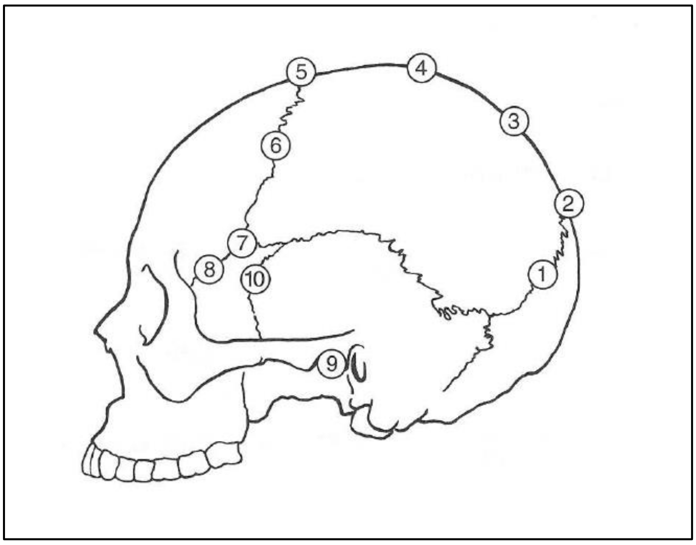

Figure 4.9: Location of the ten sites examined for the ectocranial suture fusion ageing method in Meindl and Lovejoy (1985) (Taken from White *et al* 2011: 392)

Age estimations based on cranial suture fusion are based on the assumption that cranial sutures become progressively obliterated through life (Masset 1989). Although cranial suture fusion does appear to correlate with age, there is much variability in the rates of fusion, especially in younger and older individuals (Brooks 1955, Hershkovitz *et al* 1997, Perizonius 1983, Powers 1962, Reichs 1989, Živanović 1983). Tests on documented collections suggest that cranial sutures are the least reliable indicators of age (Key *et al* 1994, Milner and Boldsen 2012, Molleson and Cox 1993: 169, Saunders *et al* 1992, Wolff *et al* 2012). For this reason, the Meindl and Lovejoy (1985) method was only used as a broad indicator of age (younger for mostly unfused and/or some partially fused sutures versus older adults for mostly partially or fully fused sutures) when more reliable indicators (epiphyseal fusion, pubic symphysis and auricular surface) could not be examined.

Dental attrition

Dental attrition refers to the process in which the enamel and dentine of erupted teeth wear down through the mastication process (McKee and Molnar 1988). Two assumptions are made when dental attrition is used as an indicator of age: firstly, that the rates of dental attrition are homogeneous within and between populations and, secondly, that dental wear was caused solely by the mastication process, but not through non-dietary use or as a result of pathologies (Milner and Larsen 1991, Whittaker 2000). Despite these issues, correlations between the amount of dental wear and age have been identified (Lovejoy 1985, Mays 2002, Richards and Miller 1991).

Brothwell (1981: 72) noted that the patterns of molar wear were consistent on British skulls from the Neolithic to the medieval periods. Based on the age-related dental attrition rates in Miles (1963), Brothwell (1981: 73) designed a schematic chart for age estimations from molar wear patterns (Figure 4.10). The occlusal wear patterns in Miles (1963) (of which the Brothwell method is based on) were found to provide accurate age estimations on a population of modern hunter-gatherers from Paraguay (Kieser *et al* 1983) and a collection of Danish medieval skulls (Helm and Prydsö 1979), although reliability levels decreased for individuals over 40 years old (Whittaker 2000).

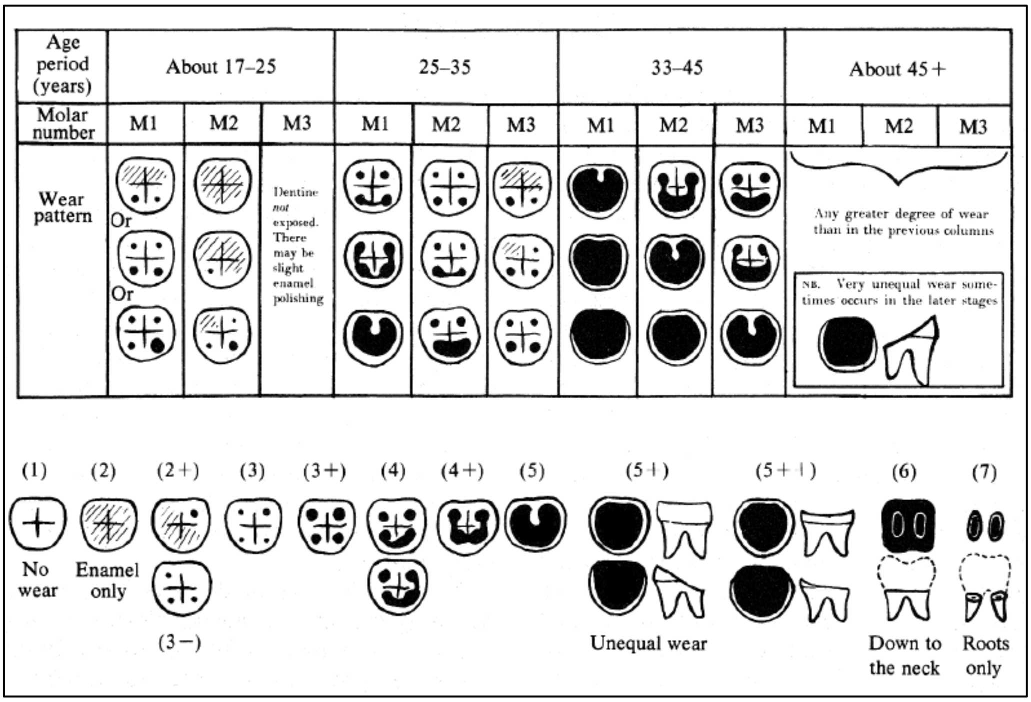

Figure 4.10: Schematic chart for age estimations based on molar wear (Taken from Brothwell 1981: 73).

The patterns of molar wear were recorded on each of the skeleton examined on the adult dental inventory sheet. Age estimation based on the Brothwell method was noted at the bottom of this sheet. However, as the rates of attrition for the particular population examined in this study were unknown (O’Connell 2004) and calibration using non-adults was not possible, dental attrition was only used as a broad indicator of age (younger adults for the first two wear categories from the Brothwell methods versus older adults for the last two categories) when age indicators on the post-cranial skeleton could not be examined. Molar attrition rates were not used as an age-at-death estimation method when individuals suffered from dental pathologies, such as antemortem tooth loss, as these may have affected the normal rates of dental wear (Mays 2013).

4.3 Cremation deposits

The analysis of cremation deposits had two objectives: firstly, to gather data on the character of each deposit in terms of overall weight, level of fragmentation, heat-related modifications (heat fractures and colour patterns) and skeletal representation and, secondly, to identify the minimum number of individuals in each deposit as well as their age and sex where possible. The data gathered from this analysis was then used to define the nature of funerary and ritual practices of MN-MBA communities in Wales (Chapters 5 and 6).

The methods used were based on the BABAO guidelines for the analysis of cremation deposits (McKinley 2004a). The terminology used for cremation deposits was also based on the BABAO guidelines (Table 4.3). The results were recorded on a cremation record sheet which contained data about the character (weight, fragmentation level, fracture patterns and bone colours), demography (minimum number of individual, sex assessment, age estimation), pathological lesions and identifiable bone fragments for each deposit (Appendix C).

Table 4.3: Terminology used in this study for cremation deposits (based on the guidelines in McKinley 2004a: 10).

Term	*Definition*
Cremation	Burning pyre
Pyre	Site of pyre, with either *in situ* or manipulated pyre debris
Cremated human bone	Burnt human bone
Cremation deposit	Deposit of cremated human bone (may be further defined as ‘cremation burial’ or ‘token deposit’)
Cremation burial	Burial deposit of cremated human bones, either urned or unurned
Token deposit	Small amount of cremated human bone (<25g)

As the purpose of this study was to gather demographic data to examine the nature of funerary and ritual practices, but not to assess the general health levels of these past populations due to time constraints, pathologies were not recorded on skeletons. However, as age indicators were often lacking in adult cremation deposits due to high levels of fragmentation, age-related degenerative diseases were recorded for cremation deposits in order to gather more data for age assessments (section 4.3.7).

4.3.1 Weight and body representation

The analysis of skeletal representation (section 4.3.4) helps to identify cases where the deliberate selection of skeletal elements to be cremated or deposited occurred. In cases where all parts of the body are represented, the weights of undisturbed cremation burials were interpreted as a reflection of the amount of cremated bones collected from the funerary pyre and deposited in the burial context. Cremated bones can be scraped from the pyre site, and possibly washed to clean the bones and remove pyre debris, or individually collected (McKinley 1994a). In both methods, however, some of the bones were inevitably missed at the pyre site, or lost when the remains were washed and transported (McKinley 2000). The analysis of weight differences between deposits (section 6.4) can be used to identify changes in practices associated with the collection and deposition of cremation deposits across time and space (Ubelaker and Rife 2007, Wahl 2008, Williams 2004).

Each cremation deposit was weighed (in grams) to one decimal place. Although bone weights for single adult individuals from modern crematoria ranged from 1734.3-5379g for males and 876-4000g for females (Bass and Jantz 2002, McKinley 1993, Murad 1998, Warren and Maples 1997), undisturbed adult cremation burials from a variety of archaeological funerary sites varied from 57-2200g (McKinley 1997). These differences in weights are a reflection of a number of processes related to the selection of the material to be cremated, from selected body parts to complete individuals, to the amount of human remains recovered from the funeral pyre, whether intentionally or accidentally, the deliberate selection of bones to be included in the burial deposit, and post-depositional factors (McKinley 1994c: 6, 85, Wahl 2008).

4.3.2 Level of fragmentation

The level of fragmentation for each cremation deposit was recorded in two ways: firstly by measuring maximum bone fragment length (in mm) and secondly by calculating the percentage fragmentation rate, a technique based on the proportions of cremated bone weights recovered in 10mm, 5mm and 2mm sieves (McKinley 1994c: 5, 2004a).

Previous interpretations of prehistoric burial practices in Britain have frequently suggested that cremated bones were deliberately fragmented prior to burial (Brothwell 1981: 14, Gejvall 1969). However, as a number of indistinguishable factors are also responsible for the fragmentation of cremated bones, from the cremation process itself, the collection and burial of the bones, post-depositional processes to the excavation and analysis of the deposits, the identification of deliberate fragmentation is not considered possible (McKinley 1993). The age-at-death and pathological status of individuals can also have an impact on fragmentation levels, as the fragile bones of neonates, infants and younger children as well as older female individuals affected by osteoporosis are more likely to fracture in the cremation process and through post-depositional processes (Christensen 2002, McKinley 1993). As a result, the fragmentation levels recorded in cremation deposits must be regarded as a reflection of collection and deposition practices, as well as post-excavation processes (McKinley 1994a).

Despite these issues, fragmentation levels were recorded as part of this analysis in order to provide more data on the processes involved in the fragmentation of cremated bones. Comparisons were made in order to examine the impact of burial contexts (pit versus cist), burial types (urned versus unurned) and age-at-death on the fragmentation levels of cremation deposits in MN-MBA funerary and ritual monuments (section 6.4).

4.3.3 Heat-induced bone modifications: bone colours and fracture patterns

The exposure of a body to fire leads to a sequence of chemical changes to the organic and inorganic components of soft tissues and bones (Mayne Correia

1997, Symes *et al* 2008). Several experiments have been conducted to examine the ways in which the visual examination of heat-induced bone modifications may help to provide more data on the pyre technologies used by past populations (McKinley and Bond 2005, Symes *et al* 2008).

Several researchers have found a relatively consistent correlation between the colour of cremated bones and the minimum temperature reached by the fire. Bone colours on cremated bones vary from black for charred bones (*c*. 400°C), to hues of blue and grey for carbonized or partly calcined bones (*c.* 600°C) to white for fully calcined or oxidised bones (>800°C) (Holden *et al* 1995, Shipman *et al* 1984, Stiner *et al* 1995, Walker *et al* 2008). However, the use of bone colours as an indicator of pyre temperature is often criticised (Devlin and Herrmann 2008, Shipman *et al* 1984, Thompson 2009), mainly due to the fact that multiple bone colours are often observable within a single cremation deposit (Figure 4.11; McKinley and Bond 2005). This is because a number of factors such as oxygen availability, amount of soft tissue coverage, thickness of cortical bone, position of the body on the pyre, amount of fuel employed in the cremation process and duration of the burning event can lead to the incomplete calcination of some bone fragments (McKinley 2008, Walker *et al* 2008). Cremated bone colour therefore reflects the completeness of the combustion process, which is dependent on both the temperature reached by the pyre and duration of the cremation process (Gonçalves *et al* 2015).

Figure 4.11: Example of multiple bone colours in the Rhiw cremation deposit, Gwynedd (Source: author).

Minimum pyre temperature was estimated in this analysis based on the colour system outlined by Wahl (2008) as this method takes into account the impact of soft tissue coverage and cortical bone thickness on bone colour and therefore allows for multiple colours to be recorded within a deposit (Table 4.4).

Table 4.4: Colour grade system for cremated bones (Modified from Wahl 2008: 149-150).

Grade	*Colour*	*Observations*	*Temperature*
I	Yellowish white	Like fresh unburned bone	To 200°C
	Ivory-coloured		*c.* 250°C
	Glassy light grey		
I-II		Roots of teeth brown-dark brown	
		Crowns of teeth without injuries	
II	Brown	-	*c.* 300°C
	Dark brown	-	
	Black	Incomplete combustion	*c.* 400°C
		Charring of organic substances	
III	Grey	Compacta inside sometimes still black	*c.* 550°C
III-IV	Milky light grey	Roots of teeth milky-grey till grey	
	Bluish grey	Crowns of teeth black with microscopial cracks	
IV	Milky white	Chalky surface	On and after 650-700°C
	Mat cretaceous	Bone calcined, light and less resistant	
V	Old white	Hard and brittle	On and after 800°C

Other heat-induced modifications to cremated bones include fractures (classified as longitudinal, straight transverse and curved transverse), patina (cracks on outer layers of cortical bone), delamination (flaking of bone layers, especially the separation of cortical and cancellous bone at epiphyses), shrinkage and warpage (Herrmann and Bennett 1999, Thompson 2005). Curved transverse fractures, patina, delamination and warpage have traditionally been interpreted as indicators that the bones were fleshed when burnt as these modifications were associated with the contraction of muscle fibres (Figure 4.12; Kennedy 1996, McKinley 2000, Symes *et al* 2008). However, as curved transverse fractures and warpage were also observed on between 6.5-8.2% of dry bones cremated after they were exhumed from seven to 45 years old inhumation burials, Gonçalves *et al* (2011) suggested that these heat-induced modifications may reflect the amount of collagen left in bones. Warping and curved transverse fractures were recently shown to be the useful indicators of the pre-burning condition of the remains, although both indicators were not always reliable (Gonçalves *et al* 2015). For this reason interpretations based on the nature of heat-induced bone modifications must be made with caution, especially as the processes involved in their formation are poorly understood (Gonçalves *et al* 2011, Thompson 2005).

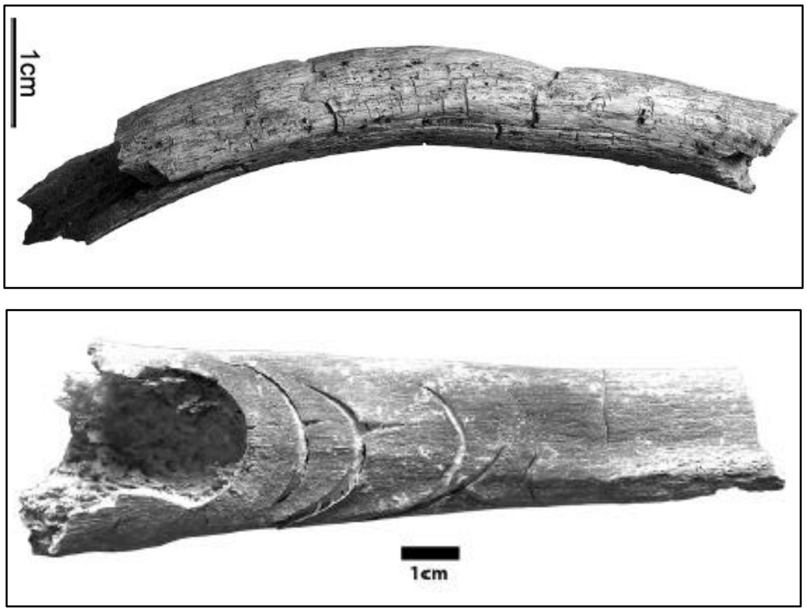

Figure 4.12: Examples of warpage (top) and curved transverse fractures (bottom) on long bones (Taken from Gonçalves *et al* 2011: 1309, 1311).

4.3.4 Skeletal representation

Each deposit was examined for identifiable bone fragments and a description of these fragments was made on the cremation record sheet. These bone fragments were then classified under five anatomical categories as skull (cranium, mandible and teeth), axial skeleton (sternum, ribs, vertebrae, sacrum, coccyx and innominates), upper limbs (clavicles, scapulae, humeri, ulnae, radii and hand bones), lower limbs (femora, tibiae, fibulae, patellae and foot bones) and unidentified. The total weight of bone from each anatomical area was calculated and percentages were calculated in order to assess the proportional representation of each anatomical category.

As the most easily identifiable cremated bone fragments are from the cranium, mandible and teeth, the skull category is often well-represented (McKinley 1994c: 6, Wells 1960). On the other hand, as long bones frequently fracture into unrecognisable fragments unless specific landmarks can be identified, the majority of cremated bones remain unidentified (McKinley 1994c: 6). Despite this, the analysis of skeletal representation is a useful tool to identify parts of the skeleton absent in the deposits, which may indicate that a deliberate selection of bones occurred prior to the cremation, or that only selected bones were collected or buried.

Animal bones were distinguished from human bones based on size differences, shape differences and by their heavier and denser bone structure (McKinley 1994c: 6). The weight (in grams) of cremated animal bones was noted on the record sheet. Due to the poor level of preservation or high rates of fragmentation, no attempts were made to identify the species represented as part of this study. However, this type of analysis represents a possible avenue for future work which could examine patterns in the inclusion of animal bones in Neolithic and Bronze Age cremation burials. It is also probable that some animal bone fragments may have been overlooked in the most heavily fragmented cremation deposits.

4.3.5 Minimum number of individuals (MNI)

The minimum number of individuals represented in each cremation deposit was based on the presence of duplicated skeletal elements and/or bone fragments with obvious age-related differences (McKinley 2004a). The bone fragments used to estimate the minimum number of individuals were clearly described on the record sheets. The burial context for each deposit was also examined in order to assess whether the inclusion of bones from other deposits may have occurred in disturbed deposits (McKinley 1994c: 6). The estimation of the minimum number of individuals represented based on the weight of the deposits or on the presence of skeletal elements with sex-related morphological differences was not attempted in this analysis as these methods are unreliable (McKinley 1994c: 6, 11).

4.3.6 Sex assessment

Sex assessments in cremation deposits are affected by a number of heat-induced modifications caused by the cremation process (Mayne Correia 1997). Firstly, the number of sexually-dimorphic traits which can be examined on the skull and pelvis in each deposit is reduced due to heat-induced fractures. Secondly, cremated bones are affected by shrinkage, which leads to a reduction in bone sizes, especially in deposits subjected to temperatures above 800°C (Thompson 2002). This reduction in bone size may lead to the misclassification of males as females (Mayne Correia 1997). On the other hand, experimental analyses have also recorded an increase in the size of some cremated bone fragments due to a type of heat-induced modification known as negative shrinkage (Thompson 2002). Thirdly, warpage leads to a deformation in bone shape which impairs the visual examination of the morphology of sexually-dimorphic traits (McKinley 1994c: 19, Thompson 2002). For these reasons, sex assessments on cremated bones must be made with caution.

Sex assessments on cremated bones were based on the visual examination of sexually-dimorphic traits on the skull (cranium and mandible) and pelvis (described in more details in section 4.2.3). Due to the fragmented nature of the deposits, skeletal traits were examined and scored individually. The reliability of sex assessments therefore depended on the number of skeletal traits preserved in each deposit (Mayne Correia 1997). Several of the more robust skeletal elements which are likely to survive the cremation process include the nuchal crest, mastoid process, supra-orbital margin and supra-orbital ridge on the cranium and the mental eminence and gonial flare on the mandible (Mayne Correia 1997). Although pelvic traits – ventral arc, sub-pubic concavity and ischiopubic ramus on the pubic bone, greater sciatic notch and preauricular sulcus on the ilium and sacrum – are more reliable sex indicators, these skeletal elements were rarely found preserved in the deposits examined in this study. As noted elsewhere (Mayne Correia and Beattie 2002), the greater sciatic notch was found to be the least useful trait as warpage, possibly caused by the contraction of pelvic muscles, frequently led to major deformations in the shape of the notches.

Due to shrinkage, the analysis of sexually-dimorphic traits focused on the morphology but not the size of each trait (Mayne Correia 1997, McKinley 1994c: 19). As some traits are more accurate that others in sex assessments, the four-tier system developed by McKinley (1994c: 20) was used to assess the reliability of scores from each individual trait: unquestioned, probable (?), possible (??) and unsexed. The final sex assessments were based on the combination of scores from sexually-dimorphic traits on both the skull and pelvis, with more weight given to scores from the most accurate skeletal traits (pelvic traits, except the greater sciatic notch, and mastoid process, supra-orbital ridge, nuchal crest and mandible gonial angle on the skull).

Several metrical methods have been developed for sex assessments in cremation deposits. Gejvall (1969) presented measurements for the cranial vault, humerus, radius and femur derived from individuals of known-sex from a modern crematorium. Van Vark (1975, cited in McKinley 2000) devised a statistical method using 57 measurements based on a similar assemblage of cremated bones. The use of such methods on archaeological material is problematic as bones tend to be too fragmented or the sample too small to be statistically significant (McKinley 2000). Sex assessments based on metrical techniques have so far proved unreliable as shrinkage is assumed to be constant across samples (Thompson 2005). Experimental analyses have shown variability in shrinkage rates based on the maximum temperature reached in the cremation process (Gonçalves 2011, Mayne Correia 1997, McKinley 2000, Thompson 2002). The technique based on the mesial angle of the internal acoustic meatus (Norén *et al* 2005) was also recently found to be unreliable (Masotti *et al* 2013). Because of these issues, metrical methods were not used for sex assessments in cremation deposits in this analysis.

4.3.7 Age-at-death estimation

Due to the fragmented nature of the deposits, age-at-death estimations on cremated bones relied on the identification of individual skeletal age indicators. The presence of unfused epiphyses, deciduous teeth and/or developing permanent teeth indicated that a non-adult was represented in the deposit. Adults were identified based on the presence of fused epiphyses and developed permanent teeth. In cases where no diagnostic features were present in the cremation deposits examined, such as teeth, epiphyses or age-related degenerative lesions, age-at-death was estimated if possible based on the general physiological appearance of bones. For example, the visual assessment of cranial vault thickness or general robusticity of bone features may help to identify the presence of a non-adult (<18 years old) or adult (≥18 years old) in the sample (McKinley, pers comm). The thickness and density of cortical bone was also used as a general age indicator in adults, as both features tend to decrease with age (Carlson *et al* 1976, Parfitt 1984, Thompson 1980). Another feature examined was the general density of trabecular bone in adults which also decreases with age (Chen *et al* 2013, Herrmann *et al* 1990, Majumdar *et al* 1997). Individuals aged based on an overall visual assessment of the size of bone features, thickness of cortical bone and/or density of trabecular bone were classified as non-adult (<18 years old) or adult (≥18 years old).

In deposits where multiple age indicators were present, more precise age estimations could be made. Developing teeth, which were protected by the alveolar bone of the jaw and have open apices so do not explode during the burning process, often survive in cremation deposits (Schmidt 2008). The patterns of crown and root development for preserved teeth were compared to the visual chart in AlQahtani *et al* (2010) (Figure 4.6). However, as observations on dental development could often only be made on a single or a few teeth, but not the full dentition, age estimations were based on the range of ages associated with the particular state of development recorded. The degree of fusion was also recorded on any epiphyses present as U (unfused), PF (partially fused) or fused (F). The pattern of epiphyseal fusion was then compared to the rates of epiphyseal union in Schaefer *et al* (2009). Based on the patterns of dental development and epiphyseal fusion, each individual was then classified under an age category (Table 4.2): foetus (before birth), infant (0-1 year old), young child (1-6 years old), older child (7-12 years old) and adolescent (13-17 years old). Due to lower bone density, bones of foetuses and infants are more susceptible to fragmentation during and after the cremation process, except for the harder crown enamel (McKinley 2000). As a consequence of this, foetuses and infants are frequently under-represented in cremation deposits from archaeological contexts (McKinley 2000).

When the majority of epiphyses were fused, except for unfused or partially fused ‘late union’ epiphyses (sacral vertebrae, medial clavicle, ischial tuberosity, iliac crest and sternebrae: Schaefer *et al* 2009: 354), individuals were classified as young adults (*c.* 18-25 years old). As the crowns of erupted teeth usually fracture when pyre temperature reaches 800°C (Schmidt 2008), third molar eruption patterns could not be examined. Age estimation methods for middle (*c.* 26-40 years old) and older (*c.* >40 years old) were more limited, as two of the most reliable skeletal elements, the pubic symphysis and auricular surface, could rarely be examined due to the high levels of fragmentation in the deposits analysed (section 5.2.3).

Although not an age estimation method *per se*, the presence of degenerative lesions in the spine (osteophytes, erosive lesions associated with disc degeneration and osteoarthritis) may also be used as a broad indicator of age (Listi and Manhein 2012). The extent (number of joints involved) and severity of degenerative changes to vertebrae tend to increase progressively from 30 years old onwards (Listi and Manhein 2012, Sager 1969, cited in Brothwell 1981: 150, Schmorl and Junghanns 1971: 159, Snodgrass 2004, Stewart 1958, Waldron 1991, Zukowski *et al* 2012). The presence of osteoarthritis in the appendicular skeleton – identified from the presence of osteophytosis, joint contour changes, porosity, subchondral cysts and eburnation (Rogers *et al* 1987) – most likely suggest that the individual was over 40 years old (Cushnaghan and Dieppe 1991, Heine 1926 cited in Ortner 2003: 547, Murray 1965). Broad age assessments (younger versus older adults) were made based on the overall patterns in the number of joints involved and severity of degenerative joint diseases. Osteoarthritis in the appendicular skeleton was only used as a broad indicator of age in conjunction with other age indicators as several other factors (e.g. biomechanical stress, fractures, metabolic conditions) may also be responsible for the development of osteoarthritis (D'Ambrosia 2005, Murray 1965, Ortner 2003: 547). In cases where only a small number of joints with lesions associated with degenerative diseases were present in the deposit, individuals were classified as middle/older adults (>25 years old).

Chapter 5: Analysis of the nature of Middle Neolithic to Middle Bronze Age funerary and ritual practices in Wales

This chapter provides an analysis of funerary and ritual practices in Wales between 3600-1200 BC. The analysis is based on contextual and demographic data collated from excavation reports and from the osteological analyses of human bone deposits (see description of Access database in section 5.1.1). Excavated Middle Neolithic to Middle Bronze Age (MN-MBA hereafter) monuments were identified through a review of the Historic Environment Record (HER) data for Wales (see introduction to Chapter 3).

257 (29.3%) excavated bone deposits were examined osteologically by the author (section 5.2). Monuments were classified within one of five chronological periods – Middle Neolithic (*c.* 3600-2900 BC), Late Neolithic (*c.* 2900-2400 BC), Chalcolithic (*c.* 2500-2200 BC), Early Bronze Age (*c.* 2200-1700 BC) and Middle Bronze Age (*c.* 1700-1200 BC) – based on the radiocarbon evidence and typochronologies discussed in Chapter 3. The primary data used for this analysis is summarised in Appendix F (human bone deposits with ID numbers (ID No. 1-257) refer to deposits analysed by the author).

Section 5.3 provides an overview of the dataset of sites from the Access database used in this study as well as highlights limitations associated with the analysis. The next sections (5.4-5.8) are focused on the analysis of monument types, burial features, deposit types, demographic data and grave goods for each chronological period (Middle Neolithic, Late Neolithic, Chalcolithic, Early Bronze Age and Middle Bronze Age). The final section (5.9) examines variability in funerary practices across time.

5.1 Methodological approaches

5.1.1 The Access database

The first step in the analysis was the creation of a database which contained all contextual and demographic data for each site (example of the Access database in Appendix E). The first sheet contained descriptive data, which includes monument name, location, monument size, and a list of excavated contexts. Each context was then linked to a record sheet containing descriptive data which included: context type and size, position in relation to monument (central versus peripheral, primary versus secondary), level of disturbance – recorded as 'undisturbed', 'disturbed' (minimal disturbance from human, animal or plant activity which had probably not led to major bone loss) and 'badly disturbed' (heavy disturbance leading to bone loss) based on descriptions from excavation reports – and a list of associated human remains and artefacts. Each human remains record sheet contained descriptive and demographic data for each human bone deposit: deposit type (inhumation or cremation), inhumation type (articulated, disarticulated, other), position (crouched, extended, front, back, left and right), cardinal orientation, cremation type (urned, unurned or other: Table 4.3), demographic data (MNI, age and sex) and pyre technology data (weight, fragmentation levels, bone colours and fracture patterns). Data related to pyre technology is discussed in Chapter 6.

5.1.2 Statistical analysis

In cases where sufficient data was available, the burial data was summarised in terms of frequency distributions. Patterns within the burial data were examined based on a comparison of frequencies between data categories. This includes, for example, differences in the number of individuals represented in terms of age and sex for different burial types (inhumations versus cremation deposits) or types of grave good associations (beads, knives, pottery vessels, etc.). χ^2 tests were used to test whether these differences were statistically significant (Shennan 1988: 65). In cases when the expected frequency in at least one category was five or lower, categorical data was compared using Fisher's exact test (FET). χ^2 Goodness of Fit tests were used to examine whether sex distributions compared to the expected 1:1 male to female ratio in a modern population (Chamberlain 2006: 18). For the purposes of statistical analyses, 'probable' and 'possible' males and females were treated as definitely sexed. The significance level established for each statistical test was 0.05 (5%), with the implication that there is a 1 in 20 chance for a Type II error (false positive) (Shennan 1988: 52).

5.2 The osteological analysis

5.2.1 The sample

257 human bone deposits were examined as part of this study, which include 31 inhumations and 226 cremation deposits (Table 5.1). Twenty cremation deposits from the Llandygai A pit circle could not be classified within a chronological period due to uncertainties about the validity of radiocarbon dates (section 3.4.3). The sample of human bone deposits analysed contained all deposits which could be located in museums, Record Offices and universities in England and Wales at the time the study was conducted (section 4.1).

Table 5.1: Number of human bone deposits examined in this study for each chronological period.

Period	*No. of inhumations*	*No. of cremation deposits*
Middle Neolithic	-	4 (ID No. 1-4)
Late Neolithic	-	4 (ID No. 5-8)
Chalcolithic	2 (ID No. 9-10)	-
Early Bronze Age	29 (ID No. 11-39)	184 (ID No. 40-223)
Middle Bronze Age	-	14 (ID No. 224-237)
(Llandygai A pit circle)	-	20 (ID No. 238-257)
Total	31	226

5.2.2 Preservation levels of inhumations

5.2.2.1 Chalcolithic (*c.* 2500-2200 BC)

Two Chalcolithic inhumations were examined in this analysis: Llantrithyd (Cardiff Archaeological Society 1977: 10) and Sutton 268' (Fox 1943: 94) (ID No. 9-10 in Appendix F). The Llantrithyd inhumation was poorly preserved, with only two bone fragments (from the shafts of the ulna and radius) present, both of which were severely eroded (preservation score of 5). The Sutton 268' inhumation was better preserved, with skeletal completeness greater than 75%, and a preservation score of 3.

5.2.2.2 Early Bronze Age (*c.* 2200-1700 BC)

In this study 29 Early Bronze Age inhumations were examined (ID No. 11-39 in Appendix F). Most skeletons were poorly preserved, probably due to acidic soil conditions (Table 5.2). 22 (75.9%) skeletons presented significant modifications to normal bone surface morphology caused by abrasion and erosion (preservation scores 3 to 5+). The most extensive changes were recorded on the Pant-y-Butler 2 skeleton (preservation score of 5+). Because of this issue, none of the bones from this skeleton could be identified anatomically. Furthermore, the majority (n=20, 69.0%) of the skeletons examined were less than 25% complete. In five cases – Frainslake, Llancaiach Isaf, Riley's Tumulus C5b and the two inhumations from Tynewydd – the skeletons were only represented by a skull. Five skeletons were only represented by a few bone fragments, which include Bier Hill (two thoracic spinous processes), Pant-y-Dulath (skull and teeth fragments), Pwll Swil B4 (mostly skull and vertebral fragments), Orseddwen and Ysceifiog (teeth and a few unidentifiable bone fragments) and Ystradfellte (lower limb fragments). Only two skeletons were well preserved: Riley's Tumulus C3, with more than 75% of the skeleton represented and a preservation score of 2, and the Whitmore Bay skeleton, with more than 75% of the skeleton represented with minimal surface erosion (preservation score of 1). The poor level of preservation of Early Bronze Age skeletons limited the amount of information available in terms of burial position and demographic data.

Table 5.2: Preservation levels of Early Bronze Age skeletons (N=29 skeletons).

	Skeletal representation				
Abrasion/erosion grade	*>75%*	*50-75%*	*25-50%*	*<25%*	*Total*
0	-	-	-	-	0
1	1	-	-	3	4
2	1	-	1	1	3
3	1	-	2	4	7
4	1	-	2	5	8
5	-	-	-	6	6
5+	-	-	-	1	1
Total	4	0	5	20	29

5.2.3 Problems and limitations of the osteological analysis

One major limitation of this study is the low number of bone deposits available for analysis for some of the chronological periods, especially for the Middle Neolithic (four cremation deposits), Late Neolithic (four cremation deposits from one site, Sarn-y-bryn-caled 2) and Chalcolithic (two inhumations). The limited number of bone deposits from these periods reflects the fact that very few burials have been identified for these periods (section 5.3.1). It is therefore not possible in these cases to assess whether any patterns identified in demographic data represent genuine trends within the burial data.

Another important issue associated with the osteological analysis is to do with the generally poor level of bone preservation, especially for inhumations. In most cases skeletons from the periods examined were incomplete – due either to the destruction of skeletal elements from taphonomic processes or the deposition in museums of selected body parts (usually crania) by antiquarian excavators – or showed poor levels of bone surface preservation (section 4.1). Furthermore, cremation deposits were found to be highly fragmented (Chapter 6), which limited the number of identifiable bone fragments in each deposit. Although the analysis aimed to use as many techniques as possible in order to increase the accuracy of age and sex assessments (sections 4.2.3 and 4.2.4), the generally poor levels of bone preservation or high fragmentation levels often restricted the number of skeletal elements available. The fact that the skull was often the best preserved or better represented part of the skeleton (especially in cremation deposits) meant that age estimations often relied on cranial suture fusion, which represents one of the least reliable ageing methods (section 4.2.4). Furthermore, dental attrition patterns could rarely be examined in cremation deposits due to the fragmented state of teeth. On the other hand, the most accurate methods, which are based on the examination of the pubic symphysis and auricular surface, could rarely be employed due to the poor survival rates of these elements: well-preserved auricular surfaces were present in only 22.6% of skeletons and 4.9% of cremation deposits and pubic symphyses in 9.7% of skeletons and 2.7% of cremation deposits.

Age estimations based on dental attrition (Figure 4.10; Brothwell 1981: 73) were found to be consistently lower than those from other skeletal elements in inhumation burials. For example, age estimations in four skeletons were within the young adult category (*c.* 18-25 years old) based on dental attrition patterns, but within the middle adult (*c.* 26-40 years old) category based on cranial suture fusion (Frainslake), auricular surface (Naaboth’s Vineyard), cranial suture fusion and auricular surface (Pwll Swil B1), and auricular surface and pubic symphysis

(Whitmore Bay). Age estimations for the Riley's Tumulus C4 and Sutton 268' skeletons were also lower based on teeth (*c.* 26-40 years old) than the estimates from the cranial suture fusion, auricular surface, pubic symphysis and degenerative pathologies (*c.* >40 years old). It is possible that the lower rates of dental attrition recorded in Chalcolithic and Early Bronze Age inhumations could reflect differences in diets to the populations used by Brothwell (1981: 72-73).

5.3 Dataset of funerary and ritual data (Access database)

5.3.1 Overview of the dataset

Between the 17th century AD and 2012, at least 876 human bone deposits from 581 individual funerary and ritual monuments have been excavated and recorded in Wales. Of these, 590 deposits from 263 excavated monuments contained sufficient contextual data (in terms of types of burial features, burial types and description of associated artefacts) to be included in this detailed analysis of funerary practices. These 263 monuments were excavated from between 1809-2012 (Figure 5.1). Data from these deposits, which include burial feature type, deposit type, demographic data, radiocarbon dates and associated artefacts are summarised in Appendix F.

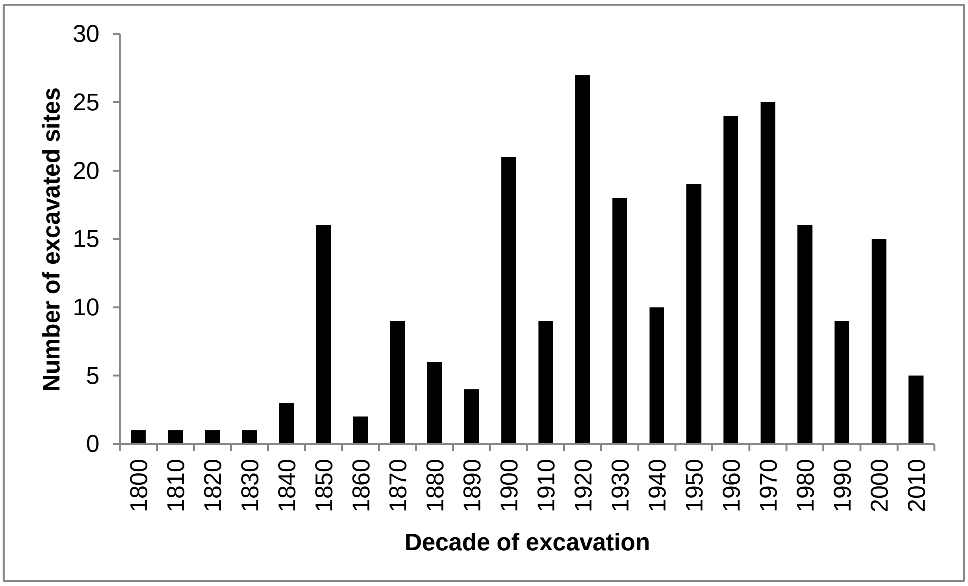

Figure 5.1: Number of excavated funerary and ritual monuments with human bone deposits per decade for the sample of sites used in this analysis (Appendix F).

The analysis of burial data presented in the next sections (5.4-5.8) is ordered chronologically. Of the sample of excavated monuments used in this analysis, seven belonged to the Middle Neolithic (*c.* 3600-2900 BC), three to the Late Neolithic (*c.* 2900-2400 BC), three to the Chalcolithic (2500-2200 BC), 228 to the Early Bronze Age (*c.* 2200-1700 BC) and 22 to the Middle Bronze Age (*c.* 1700-1200 BC) (Figure 5.2).

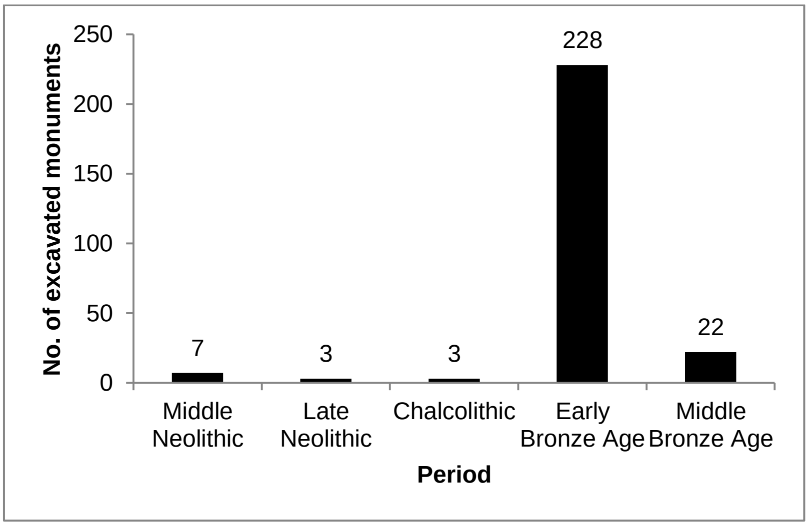

Figure 5.2: Number of excavated sites for each chronological period in the sample of sites included in this analysis (Appendix F).

5.3.2 Limitations of the analysis

The analysis of burial data in this study is limited to excavated sites with detailed excavation accounts. As excavated bone deposits without contextual data were excluded from the analysis (section 5.3.1), it is possible that the burial evidence may not be entirely representative of the wider sample of excavated sites. Furthermore, as burial data was examined as one sample which covered the whole of Wales, regional differences in funerary and ritual practices could not be identified through this analysis.

Another problem is that 449 (78.8%) human bone deposits were not associated with radiocarbon dates. In such cases bone deposits were classified within a chronological period based on the typochronologies for monument types and grave good associations discussed in Chapter 3. However, it is probable that some of the bone deposits may have been misclassified.

Of the total sample of excavated bone deposits, 619 (70.7%) deposits could not be examined by the author (section 4.1). For these deposits demographic data

(MNI, age and sex) from published excavation reports were included into this study where possible (Appendix F). However, as age estimation methods did not become more accurate until the 1980s (Brothwell 1981), broad age categories (non-adult and adult) were used for bone reports published before this decade.

5.4 Middle Neolithic (*c.* 3600-2900 BC)

5.4.1 Monument types

Eleven Middle Neolithic bone deposits have been identified from seven sites, which include five pit graves (Bryn Gwyn: Smith 2012, Four Crosses 5: Warrilow *et al* 1986, Llandygai A: Lynch and Musson 2001, Lower Luggy: Gibson 2006, Trelystan II: Britnell 1982), a timber circle (Meusydd I: Jones 2009), and a stone arc (Bryn Celli Ddu: Burrow 2010a, Hemp 1930).

There is no evidence that Middle Neolithic pit graves in Wales were covered by mounds. At Llandygai A, a thick stone slab had been placed above the burial deposit (deposit A252) at the top of the pit (Lynch and Musson 2001: 45). Burial 1 at Trelystan II had been covered by a small inconspicuous mound constructed from the upcast material from the pit (Britnell 1982: 137). Although the grave pit at Four Crosses 5 was surrounded by a 21.7m circular ditch (ring ditch 1) (Warrilow *et al* 1986: 66), there is no evidence to suggest that material from this ditch was used to construct a mound.

5.4.2 Burial features

The central inhumation burial at Four Crosses 5 had been placed at the base of a large 4.5 x 3.8m wide x 1.4m deep sub-rectangular pit cut into the ground (Phase 1 burial pit) (Warrilow *et al* 1986: 64). A further two inhumations were placed in smaller oval pits cut at both ends of the floor of the grave pit. At Trelystan II a cremation burial (burial 1) had been deposited at the base of a 2.9 x 1.6m wide sub-rectangular rock-cut pit (Britnell 1982: 136). The presence of subsided cairn material within the fill of this pit suggests that an inhumation burial, possibly in a wooden coffin, had been placed above the cremation burial. The cremation burial (deposit A252) at Llandygai A was found at the top of a shallow 1.1 x 0.8m wide pit (Lynch and Musson 2001: 45). Grave pit orientations varied from N-S at Llandygai A, NNE-SSW at Four Crosses 5 and NE-SW at Trelystan II.

At Lower Luggy, a cremation burial had been placed at the base of a 0.6m wide pit cut into the subsoil (Gibson 2006: 177). The cremation burial post-dates the sub-rectangular enclosure by several centuries (section 3.1.1). The cremation burial at Bryn Gwyn was found scattered throughout the fill of a 0.5m wide pit (pit 138) which may have represented a posthole (Smith 2012: 27). At Meusydd I, a cremation burial had been placed against the side of the timber post (posthole 19) when the timber circle was constructed (Jones 2009: 50). At Bryn Celli Ddu, four token deposits of cremated bones are associated with structures which pre-date the construction of the mound, the central pit and stone arc (stones I, J, K) (Hemp 1930: 196, 202-203).

5.4.3 Deposit types

Four (30.8%) Middle Neolithic bone deposits represented inhumations and nine (69.2%) cremation deposits. The three inhumations from Four Crosses 5, of which only small fragments of decayed bones survived due to acidic soils (Warrilow *et al* 1986: 65), were in a crouched position. No bone survived for the Trelystan II inhumation, although the shape of the possible wooden coffin would suggest an extended inhumation (Britnell 1982: 136). Five (55.6%) Middle Neolithic cremation deposits (Bryn Gwyn, Llandygai A252, Lower Luggy, Meusydd I, Trelystan II) represented burials, and four (44.4%), from the central pit and stone arc at Bryn Celli Ddu, token deposits of cremated bones (Burrow 2010a: 256).

5.4.4 Demography

Ten (90.9%) bone deposits were sufficiently well preserved to assess demographic data, four (40.0%) of which were examined in this study (ID No. 1-4 in Appendix F). Eight (80.0%) bone deposits contained one individual and two (20.0%) multiple individuals, three individual inhumations at Four Crosses 5 and four individuals in the Bryn Gwyn cremation burial.

Of the total sample, 13 of the 15 individuals could be placed within broad age categories (Table 5.3, Figure 5.3): five (38.5%) were non-adults and eight (61.5%) adults. Four (50.0%) adults were sexed, which include one (25.0%) ?male and three (75.0%) ??females, with a sex ratio of 1:3 in favour of females. There is no significant difference between the number of males and females represented in Middle Neolithic deposits (p = 0.625; Fisher's Exact Test).

Table 5.3: Middle Neolithic bone deposits by age and sex (N=15 individuals; M = male, F = female, ? = unsexed).

Age	*M*	*?M*	*??M*	*F*	*?F*	*??F*	*?*	*Total*
Foetus/neonate	-	-	-	-	-	-	1	1
Infant	-	-	-	-	-	-	2	2
Child	-	-	-	-	-	-	1	1
Adolescent	-	-	-	-	-	-	-	-
Non-adult	-	-	-	-	-	-	1	1
Total non-adult	-	-	-	-	-	-	5	5
Young adult	-	-	-	-	-	-	-	-
Young/middle adult	-	-	-	-	-	1	-	1
Middle adult	-	-	-	-	-	-	-	-
Middle/older adult	-	-	-	-	-	1	1	2
Older adult	-	-	-	-	-	1	-	1
Adult	-	1	-	-	-	-	3	4
Total adult	-	1	-	-	-	3	4	8
Indeterminate	-	-	-	-	-	-	2	2
Total	-	1	-	-	-	3	11	15

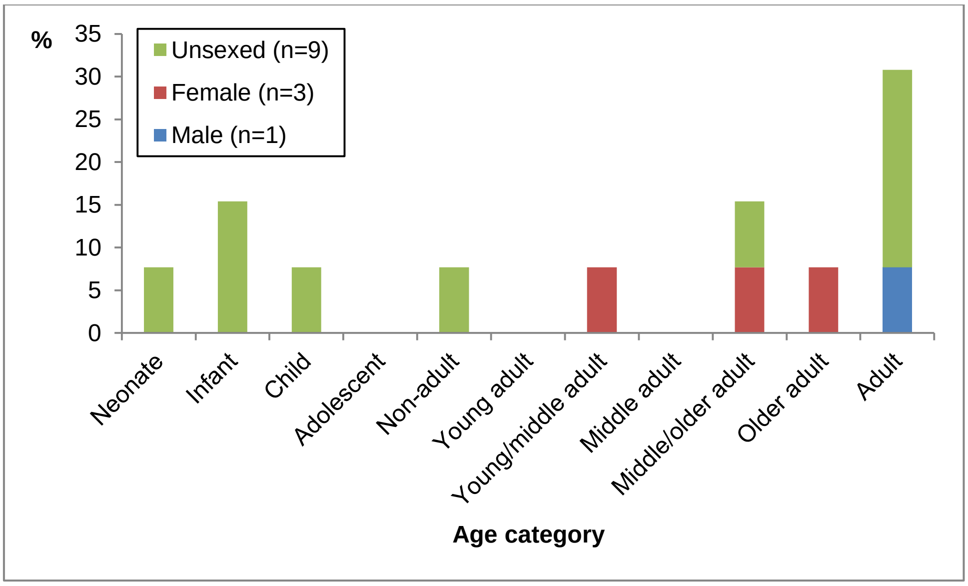

Figure 5.3: Demographic data for Middle Neolithic deposits (N=13 individuals).

5.4.5 Grave goods

Five (45.5%) Middle Neolithic bone deposits were associated with artefacts. This includes an Ebbsfleet bowl and a pear-shaped stone with the central inhumation at Four Crosses 5 (Warrilow *et al* 1986: 64), a flint knife and two worked flints with the cremation burial at Trelystan II (Britnell 1982: 136), and an axe-polisher, placed next to the flat stone slab on top of the pit, at Llandygai A (Lynch and Musson 2001: 45). Two sherds of Impressed Ware found in the pit fill were interpreted as accidental inclusions (Lynch and Musson 2001: 46). Two pieces of jasper were also found in the central pit at Bryn Celli Ddu (Hemp 1930) and seven pieces of flint and a piece of quartzite with the Lower Luggy cremation burial (Gibson 2006: 177).

5.5 Late Neolithic (*c.* 2900-2400 BC)

5.5.1 Monument types

Ten bone deposits from three excavated monuments date to the Late Neolithic period (Appendix F). Six (60.0%) deposits came from two passage graves, Barclodiad y Gawres (Powell and Daniel 1956) and Bryn Celli Ddu (Burrow 2010a, Hemp 1930). Four deposits were found associated with the Sarn-y-bryn-caled 2 penannular ring ditch (Gibson 1994).

5.5.2 Burial features

At Bryn Celli Ddu, a token deposit of cremated bones was found in a small cavity near stone 29 which forms part of the outer kerb of the burial mound (Burrow 2010a: 256). The orthostatic passage and chamber at Bryn Celli Ddu were extensively disturbed by antiquarian investigations; the only bone fragments associated with the use of the tomb came from the disturbed passage floor (Burrow 2010a: 256, Hemp 1930). At Barclodiad y Gawres cremation deposits were found scattered on the floor surface of the southern, eastern and western chambers (Powell and Daniel 1956: 18-20). Although the deposits from the southern and eastern chambers had been previously disturbed, the contents of the western chamber did not appear to have been significantly disturbed (Powell and Daniel 1956: 19).

At the Sarn-y-bryn-caled 2 penannular enclosure, a primary cremation deposit (cremation 1) had been placed at the base of the ditch near the entrance and a further three deposits (cremation deposits 2-4) were subsequently deposited when the ditch was recut (Gibson 1994: 159, 2010c).

5.5.3 Deposit types

Nine (90.0%) bone deposits from Late Neolithic sites were cremation deposits, and one (10.0%), from the passage at Bryn Celli Ddu, unburnt bone. The unburnt bone fragments from Bryn Celli Ddu most probably represent the remains of at least one disturbed inhumation burial which had been deposited on the floor of the passage (Burrow 2010a: 254). It is likely however that more interments had been placed in the monument as suggested by antiquarian records (Burrow 2010a: 254, Hemp 1930: 179-180). Four (44.4%) cremation deposits, from the passage and chambers at Barclodiad-y-Gawres and Bryn Celli Ddu, probably represent burial deposits (but see section 7.2.3), and five (55.6%), from the Sarn-y-bryn-caled 2 penannular ditch and from a cavity behind a kerb stone at Bryn Celli Ddu, token deposits of cremated bones.

5.5.4 Demography

All Late Neolithic bone deposits were associated with demographic data, four (44.4%) of which were analysed in this study (ID No. 5-8 in Appendix F). Eight (80.0%) bone deposits contained one individual, and two (20.0%) deposits multiple individuals, two from the undisturbed cremation deposit in the western chamber at Barclodiad-y-Gawres (Powell and Daniel 1956: 21) and two from the cremation deposits from the disturbed passage floor at Bryn Celli Ddu (Burrow 2010a: 256).

Of the total sample, 11 of the 12 individuals could be placed within broad age categories (Table 5.4, Figure 5.4): one (9.1%) was a non-adult and 10 (90.9%) adults. Three (30.0%) adults were sexed, which include two (65.7%) ?males and one (33.3%) ??female. There is no significant difference between the number of males and females represented in Late Neolithic burials ($p = 1.000$; Fisher's Exact Test).

Table 5.4: Late Neolithic bone deposits by age and sex (N=12 individuals; M = male, F = female, ? = unsexed).

Age	*M*	*?M*	*??M*	*F*	*?F*	*??F*	*?*	*Total*
Foetus/neonate	-	-	-	-	-	-	-	-
Infant	-	-	-	-	-	-	-	-
Young child	-	-	-	-	-	-	1	1
Older child	-	-	-	-	-	-	-	-
Adolescent	-	-	-	-	-	-	-	-
Total non-adult	-	-	-	-	-	-	1	1
Young adult	-	-	-	-	-	-	-	-
Young/middle adult	-	-	-	-	-	-	2	2
Middle adult	-	-	-	-	-	-	-	-
Middle/older adult	-	-	-	-	-	-	2	2
Older adult	-	-	-	-	-	1	-	1
Adult	-	2	-	-	-	-	3	5
Total adult	-	2	-	-	-	1	7	10
Indeterminate	-	-	-	-	-	-	1	1
Total	-	2	-	-	-	1	9	12

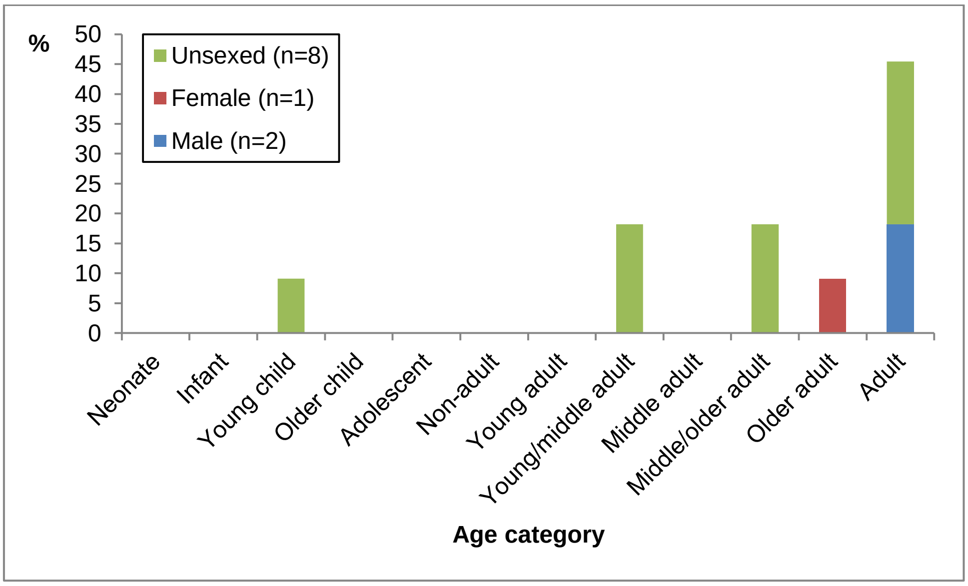

Figure 5.4: Demographic data for Late Neolithic bone deposits (N=11 individuals).

5.5.5 Grave goods

Only one (10.0%) Late Neolithic bone deposit was associated with an artefact, a burnt flint flake with cremation 1 at the Sarn-y-bryn-caled 2 penannular ring ditch (Gibson 1994: 159).

5.6 Chalcolithic (*c.* 2500-2200 BC)

5.6.1 Monument types

Three burial deposits date to the Chalcolithic period, all of which probably represent early examples of Beaker burials: Llantrithyd (Cardiff Archaeological Society 1977: 10), Penderyn (Savory 1980: 138) and Sutton 268’ (Fox 1943: 94) (section 3.3.2 for the dating evidence). In two cases – Llantrithyd and Penderyn – no monument was found to be associated with the deposit. It was originally suggested that the inhumation burial at Sutton 268’ had been surrounded by a U-shaped structure of cairn material covered by a small 7.9 x 5.7m wide mound (Fox 1943: 94). However, it is more likely that this burial had been placed into a large pit dug into an existing round cairn, which would account better for the unusual U-shape of cairn material (Lynch 2000: 122). The Sutton 268’ monument therefore probably represents one of the earliest round cairns built in Wales.

5.6.2 Burial features

The inhumation burial from Sutton 268’ had been placed within a 2.5 x 0.6m wide rectangular setting of stone blocks on the floor of a rock-cut pit orientated N-S (Fox 1943: 94). The human bone fragments, wristguard and bone pin from Llantrithyd, which were found in close association with a post-pit (post-pit 32) near an Early Medieval rectangular building, were interpreted as the remains of a disturbed inhumation burial (Cardiff Archaeological Society 1977: 10). No contextual data is available the Penderyn burial deposit.

5.6.3 Deposit types

Deposits of human bones were recovered at both Llantrithyd and Sutton 268’, but no record was made of human bones associated with the Beaker and the possible stone spindlewhorl from Penderyn. The Llantrithyd deposit consists of fragmented bones, most probably the remains of a disturbed inhumation burial. The Sutton 268’ deposit represents a crouched inhumation burial. The body had been placed on its left side and with the head to the south.

5.6.4 Demography

The deposits from both Llantrithyd and Sutton 268' were examined as part of this analysis (ID No. 9-10 in Appendix F). The Llantrithyd inhumation represents the remains of an adult, and the Sutton 268' inhumation an older adult male.

5.6.5 Grave goods

Both the Penderyn and Sutton 268' burials were accompanied a Low-Carinated Beaker. The Beaker at Sutton 268' was positioned near the head of the individual. No Beaker was found associated with the Llantrithyd inhumation, although this is probably due to the fact that the burial had been heavily disturbed in the Early Medieval period (Cardiff Archaeological Society 1977: 10). Other associated artefacts include a stone wristguard (made of nephrite, a type of stone found around the Alps (Burrow 2011: 149-150)) and bone pin at Llantrithyd (Cardiff Archaeological Society 1977: 10), seven flint barbed-and-tanged arrowheads and a flint scraper placed around the hands and feet of the individual at Sutton 268' (Fox 1943: 94), and possibly a spindlewhorl at Penderyn (Savory 1980: 138).

5.7 Early Bronze Age (*c.* 2200-1700 BC)

This section is based on the analysis of 516 burial deposits from 228 excavated Early Bronze Age sites, which include 117 (22.7%) inhumations and 399 (77.3%) cremation deposits.

5.7.1 Monument types

5.7.1.1 Inhumations

In Wales, at least 117 Early Bronze Age inhumation burials from 95 sites have been identified (Appendix F). In 19 (20.0%) cases only the burial feature (a pit or cist) had survived without any traces of associated monuments. 72 (75.8%) burials were associated with a circular mound, either a round barrow (n=44) or a burial cairn (n=28). In one instance (Hendre: Brassil and Gibson 1999), the burial was placed in a pit dug into a natural mound. Other types of monuments with possible inhumation burials include two stone circles (Hengwm S: Crawford 1920 and Ynys Hir: Dunning 1943), and the Middle Neolithic sub-rectangular enclosure at Lower Luggy (Gibson 2006: 174-176).

Of the sample of burial mounds, 63 (87.5%) sites contained a single inhumation burial and nine (12.5%) multiple inhumation burials (between two to five). As 48 (65.7%) mounds were only partially excavated, it is probable that several of these sites contained more burials. However, of the sample of fully excavated sites (n=24), the majority of mounds (n=19, 79.2%) contained a single inhumation burial. Burial mounds with multiple inhumation burials include Tandderwen (Brassil *et al* 1991) and Plas Heaton (Wynne-Ffoulkes 1851b) in Denbighshire; Crown Farm in Flintshire (Davies 1929a); Twyn y Beddau (Thomas 1872) and Ysgwennant (Day and Savory 1972) in Powys; Pwll Swil (Ward 1919), Riley's Tumulus (Ward 1919) and Welsh St Donats 3 (Ehrenberg *et al* 1981) in Glamorgan.

Most (n=58, 82.9%) inhumation burials belonged to the primary phase of monuments (i.e. deposited before the mound was built), the majority (70.7%) of which were located centrally in relation to the final enlarged mound (Table 5.5). The difference between the number of primary and secondary inhumation burials is significant ($\chi^2_{(1)} = 30.229$, $p < 0.001$), which indicates that inhumation burials were predominantly deposited before the mound was built. There is also a significant association between the phase (primary and secondary) and position (central and non-central) of inhumation burials ($p < 0.001$; Fisher's Exact Test): primary inhumations are predominantly located in a central position and secondary inhumations in a non-central position. However, the fact that 13 (18.6%) inhumation burials came from partial excavations focused on the central part of the mounds probably introduced a bias in the number of central burials, but not in the relationship between primary and secondary burials.

Table 5.5: Frequencies of Early Bronze Age inhumation burials in terms of phase and position (N=70 inhumation burials).

		Central		*Non-central*	
Phase	*Total*	*No.*	*%*	*No.*	*%*
Primary	58	41	70.7	17	29.3
Secondary	12	1	8.3	11	91.7
Total	70	42	60.0	28	40.0

Of the sample of burial mounds, 31 (43.1%) monuments with inhumation burials also contained secondary cremation deposits. These were sometimes placed in pits dug into the primary burial feature (n=3 sites: Banc Troed-Rhiw-Seiri: Houlder 1956, Pant-y-Dulath: Feather 1990 and Sutton 268': Fox 1943) or in the ground surface near the burial feature (n=4 sites; e.g. Bedd Emlyn: Savory 1961 and Cefn Goleu: Bevan-Evans and Hayes 1955). In more common instances the cremation deposits were placed in the small round cairns which covered the primary inhumation burial (n=4 sites; e.g. Llong: Lynch 1983 and Ysceifiog: Fox 1926b) or into the enlarged burial mound (n=20 sites; e.g. Disgwylfa Fawr: Green 1987, Merddyn Gwyn: Hughes 1908, Ty'n-y-pwll: Baynes 1909 and Ysgwennant: Day and Savory 1972).

5.7.1.2 Cremation deposits

In Wales, at least 399 Early Bronze Age cremation deposits from 159 sites have been excavated and recorded (Appendix F). The majority of excavated monuments (n=134, 90.5%) were burial mounds (Figure 5.5). Other types of monuments include cremation cemeteries, circular enclosures (henges, timber circles and stone circles), a standing stone (Maen Llwyd: Hemp 1932), a natural mound (Maesymynan: Drewett 1970) and a *c.* 90m long drystone 'terrace' (Bryn yr Hen Bobl: Hemp 1935). These excavated monuments contained between one and 16 cremation deposits (Figure 5.6).

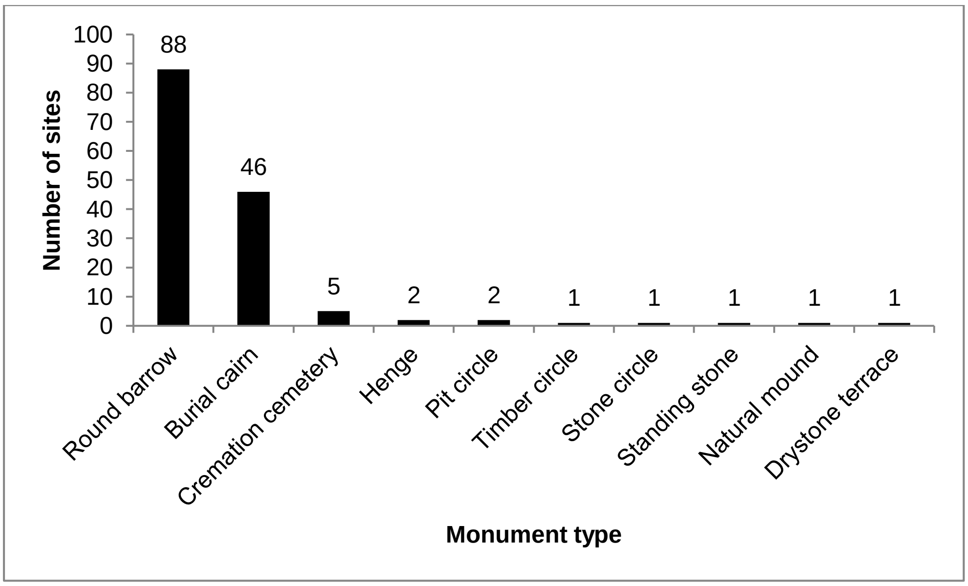

Figure 5.5: Number of excavated Early Bronze Age monuments with cremation deposits (N=148 sites).

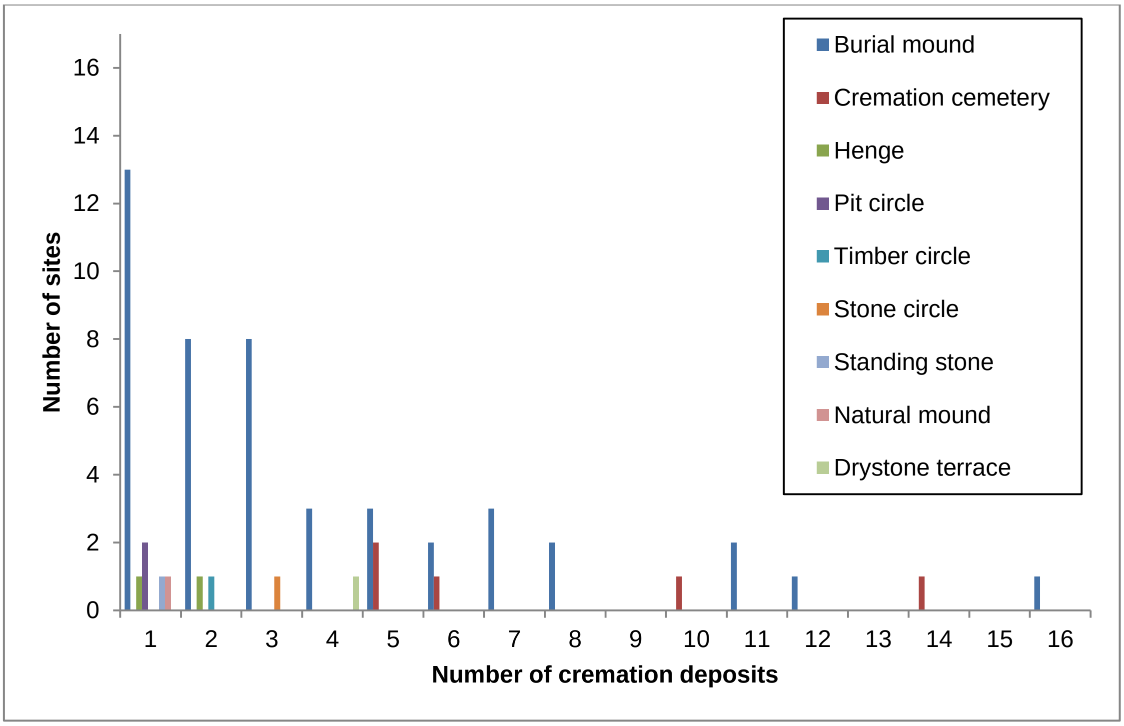

Figure 5.6: Number of cremation deposits in excavated Early Bronze Age monuments (N=60 sites; only fully excavated burial mounds included).

Just over half (n=72, 53.7%) of excavated burial mounds yielded one cremation deposit. However, when partially excavated sites are excluded, a greater proportion (n=33, 71.7%) of mounds contained multiple deposits (Figure 5.6). It is also probable that many of these monuments had originally contained a greater number of deposits which were destroyed when the mounds were levelled or ploughed out (11 excavated burial mounds were extensively damaged). The largest number of deposits came from Cae Meini in Anglesey where 32 cremation deposits were found within a circular area around 11m in diameter in a ploughed field in 1882 (Pritchard 1882), although it is also possible that this site may represent a cremation cemetery.

Almost two-thirds (n=179, 62.6%) of cremation deposits belonged to the primary phase of burial mounds (Table 5.6). Of the sample of fully excavated sites, 16 (45.7%) contained only one primary deposit (87.5% of which were located centrally) and 19 (54.3%) multiple primary deposits (between two and 16). On the other hand, 107 (37.4%) cremation deposits represented secondary insertions. Of the sample of fully excavated sites, 23 (52.3%) mounds contained secondary deposits (between one and eight within individual mounds). The significant difference between the number of primary and secondary burials ($\chi^2_{(1)}$ = 18.126, $p < 0.001$) suggests that the majority of cremation deposits were deposited before the final enlarged mound was constructed. However, 29 (10.1%) cremation deposits came from ploughed out mounds which produced a bias in the number of primary burials. There is also a significant association between phase (primary and secondary) and position (central and non-central) ($\chi^2_{(1)}$ = 45.497, $p < 0.001$): primary deposits were most frequently located centrally within the mound and secondary deposits in a non-central position. The fact that 14 (4.9%) cremation deposits came from partial excavations focused on the central part of the mounds may have introduced a bias in the number of central burials.

Table 5.6: Frequencies of Early Bronze Age cremation deposits in terms of phase and position (N=286 cremation deposits).

		Central		*Non-central*	
Phase	*Total*	*No.*	*%*	*No.*	*%*
Primary	179	77	43.0	102	57.0
Secondary	107	6	5.6	101	94.4
Total	286	83	29.0	203	71.0

The number of cremation deposits in cremation cemeteries varied between five at Blaen-y-cae (Smith 2006) and Llanilar (Benson *et al* 1982), six at Tandderwen (Brassil *et al* 1991), 10 at Cefn Cwmwd (Roberts *et al* 2012) and 14 at Capel Eithin (White and Smith 1999) (Figure 5.6). Several more substantial cremation cemeteries have been reported in the antiquarian literature, which include 30 cinerary urns with cremation deposits from St Lawrence's Church, Carmarthenshire (Curtis 1880: 146), and 32 cremation deposits from Cae Meini, Anglesey (Pritchard 1882).

Circular enclosures were found to contain one (Llandygai A henge: Lynch and Musson 2001), two (Llandygai B henge: Lynch and Musson 2001, Sarn-y-bryn-caled 1 timber circle: Gibson 1994) and three (Druid's Circle stone circle: Griffiths 1960) cremation burials (Figure 5.6). Six (75.0%) deposits were located centrally within the enclosure (Druid's Circle primary cist and secondary urns 1-2, Llandygai B120, Sarn-y-bryn-caled 1 primary and secondary cremation deposits) and two (25.0%) in a non-central position (Llandygai A13, Llandygai B23).

5.7.2 Burial features

5.7.2.1 Inhumations

Around half (n=57, 48.7%) of Early Bronze Age inhumation burials were placed in well-built short-cists which varied between 0.3-1.8m in length and 0.3-1.1m in width. In 47 (40.2%) cases, inhumation burials came from grave pits dug into the ground surface (e.g. Banc Troed-Rhiw-Seiri: Houlder 1956 and Ysceifiog: Fox 1926b) or into the mound (e.g. Disgwyfa Fawr: Green 1987 and Riley's Tumulus C1-C3: Ward 1919), which varied between 0.5-3.8m in length and 0.5-3.0m in width. Burial pits were usually larger in size than cists (Figure 5.7).

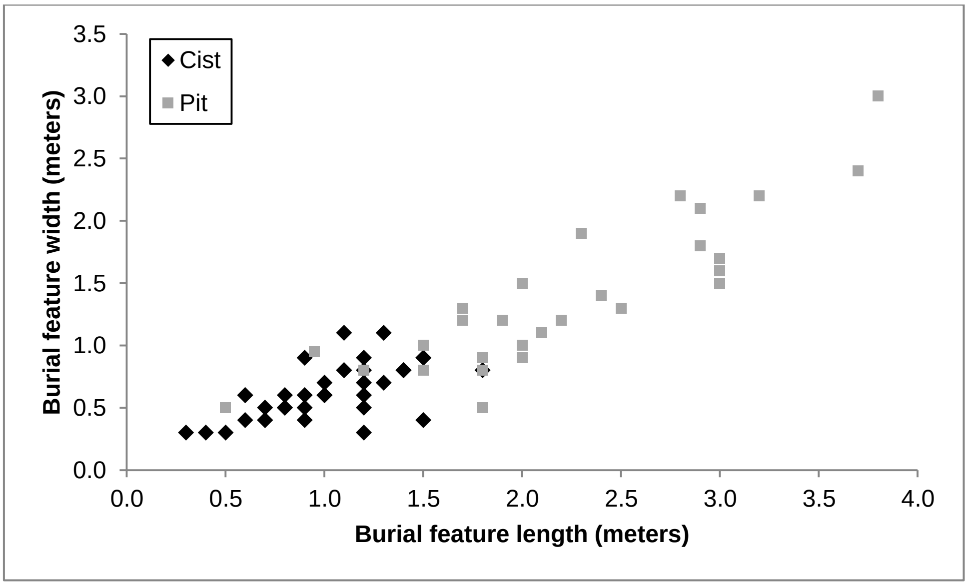

Figure 5.7: Size of burial features for Early Bronze Age inhumations (N=65 burial features).

Seven (14.9%) pits were covered with a large stone slab, and six pits (12.8%) contained stone settings around the inhumation burial made from stone blocks (Aber Camddwr II: Hogg 1977, Cefn Bryn: Ward 1987, Cefn-Goleu: Bevan-Evans and Hayes 1955), piled stones (Bedd Emlyn primary pit No. 1: Savory 1961) or drystone walls (Ty'n-y-pwll: Hughes 1908). Eleven (23.4%) burial pits contained wooden structures, which include wooden coffins or boxes (Bedd Emlyn primary pit No. 2: Savory 1961, Four Crosses 5 phase 2 grave: Warrilow *et al* 1986, Tandderwen inhumations 1 and 2: Brassil *et al* 1991: 51, 56), tree trunk coffins or wooden dug-outs (Bedd Emlyn primary pit No. 1: Savory 1961, Disgwylfa Fawr: Green 1987, Pant-y-Dulath: Feather 1990), wooden plank floors (Brenig 41: Waddell 1993b, Cefn Bryn: Ward 1987), rectangular stake settings (Four Crosses 1: Warrilow *et al* 1986, Gray Hill: Chadwick and Pollard 2005: 15) and timber posts (Aber Camddwr II: Hogg 1977, Four Crosses 1: Warrilow *et al* 1986).

Other less common types of burial features for Early Bronze Age inhumations include the two crouched inhumations (burials B and C) at Welsh St Donats 3 placed directly on the ground surface inside stone block settings (Ehrenberg *et al* 1981: 814), the crouched inhumation placed on the cover stone of the primary cist at Plas Heaton (Wynne-Ffoulkes 1851b), and the earth platform between two split-tree trunks surrounded by a ditch at Caer Euni I (Lynch 1986: 87-88).

Most cists with inhumations (n=21, 77.8%) were orientated, or roughly orientated, on a N-S alignment (Table 5.7). The orientation of burial pits was more variable, with 15 (42.9%) orientated, or roughly orientated, N-S, nine (25.7%) NW-SE, nine (25.7%) NE-SW and two (5.7%) E-W.

Table 5.7: Orientation of burial features with Early Bronze Age inhumation burials (N=66 burial features).

	Burial feature			
Orientation	*Cist*	*Pit*	*Other*	*Total*
N-S	19	11	2	32
NNE-SSW	2	2	-	4
NNW-SSE	-	2	1	3
NE-SW	3	6	-	9
ENE-WSW	-	3	-	3
NW-SE	1	8	-	9
WNW-ESE	-	1	-	1
E-W	2	2	1	5

5.7.2.2 Cremation deposits

Around two-thirds (n=264, 65.2%) of cremation deposits were in circular pits (between 0.1-0.9m in diameter) or elongated pits (between 0.3-2.9m in length and 0.2-1.9m in width), 19 (7.2%) of which were stone-lined and 19 (7.2%) covered by stone slab(s). Eight (3.0%) pits were associated with wooden features which include timber mortuary structures (e.g. Brenig 40: Waddell 1993a), wooden boxes (e.g. Tandderwen cremation 7: Brassil *et al* 1991), hollowed-out tree trunks (e.g. Disgwylfa Fawr: Green 1987) and planks (e.g. Llandygai B23: Lynch and Musson 2001). In less common instances (n=57, 14.3%), cremation deposits came from cists which varied between 0.3-2.7m in length and 0.2-1.1m in width. The sizes of burial features were highly variable, and no obvious difference between the sizes of cists and burial pits could be identified (Figure 5.8). There is much variability in terms of the orientation of burial features with cremation deposits, although the most common orientations are NE-SW, or roughly NE-SW (n=9, 33.3%), N-S, (n=8, 29.6%) and NW-SE (n=7, 25.9%) (Table 5.8).

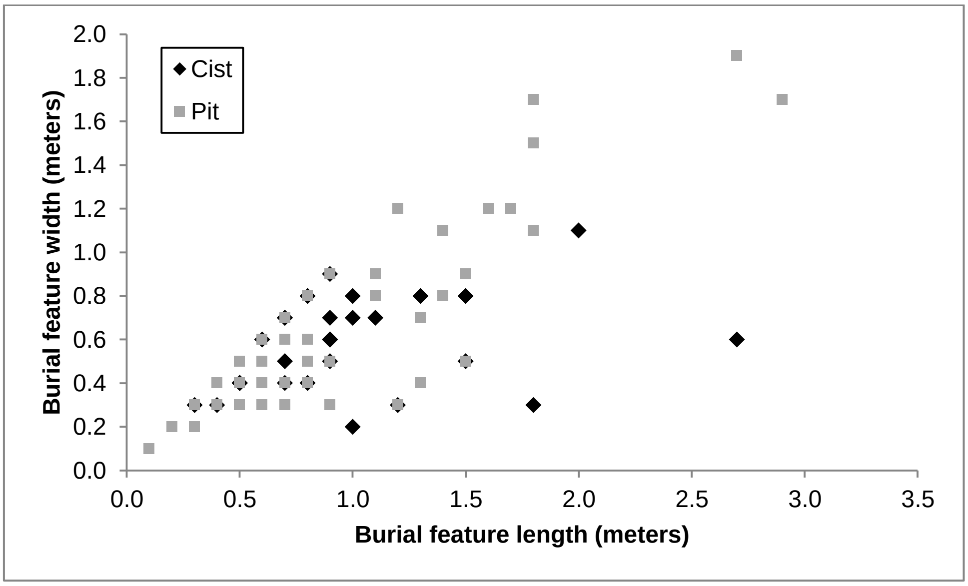

Figure 5.8: Size of burial features for Early Bronze Age cremation deposits (N=309 burial features).

Of the total sample, 31 (7.8%) cremation deposits had been placed directly on the ground surface before the mound was built. These were sometimes placed in or near natural hollows or fissures in the bedrock, as for example at Allt-y-Garn (Murphy 1995), Llanmaes (Lodwick and Gwilt 2010) and Pen-y-Glogau (deposit G) (Jones and Davies 1930). In three (0.8%) instances the cremation deposits were found amongst the stones of the inner cairn (Carneddau I: Gibson 1993b, Ffridd y Garreg Wen burial C: Williams 1921, Llong: Lynch 1983). Two (0.5%) deposits were deposited in the mound as it was constructed (Marlborough Grange CI: Savory 1969, Treiorwerth pot 1: Lynch 1971).

Table 5.8: Orientation of burial features with Early Bronze Age cremation deposits (N=27 deposits).

	Burial feature		
Orientation	*Cist*	*Pit*	*Total*
N-S	3	3	6
NNE-SSW	1	-	1
NNW-SSE	1	-	1
NE-SW	4	4	8
ENE-WSW	-	1	1
NW-SE	3	3	6
WNW-ESE	-	1	1
E-W	-	3	3

Fifteen features with cremation deposits showed signs of *in situ* burning, which include pit 21-23 at Carneddau I (Gibson 1993b: 36), pit 2 at Aber Camddwr I (Hogg 1977: 30), and possibly the central pit at Linney Burrows (Gordon-Williams 1926: 186). Possible evidence for *in situ* burning (represented by red soil) was identified on the ground surface near cremation II at Sheeplays 279' (Fox 1941: 116) and cremation deposits D, E and F at Sutton 268' (Fox 1943: 95). Burnt areas were also recorded near the primary burial at Letterston II (Savory 1948: 73), near the primary burial at Pond (Fox 1959: 108) and under the west end of the penannular stone setting at Pentre Farm (Ward 1988: 50). The size of the burnt area at Letterston II (1.8 x 1.2m) would suggest that this represented the remains of an *in situ* pyre (Savory 1948: 73). Another probable *in situ* pyre was also identified around pit burial 4 under the enlarged burial mound at Trelystan I (Britnell 1982: 153). The similar rectangular burnt wooden structures under the round barrows at Brenig 40 (Waddell 1993a: 62) and Brenig 42 (Lewis 1993a: 48, 51) were also interpreted as the remains of possible *in situ* cremation pyres (Marshall 2011: 4). The carbonised wooden planks on the ground surface under the Cwm Difwg IV mound were interpreted as redeposited pyre material (Burgess 1961). A similar deposit of pyre material was also recorded in the fill of the pit around the primary urned burial at Sheeplays 293' (Fox 1941). A number of antiquarian excavation accounts refer to a black layer of carbonised material with cremated bones on the ground surface under the mound as the sites of pyres, as for example at the Blaen Nedd Isaf (Cantrill 1898: 262) and Pen y Gaer Hillfort (Hughes 1906: 247-248) round barrows. However, as none of these accounts mention the presence of fire-hardened ashy black soil or red/salmon-pink soil associated with *in situ* burning (Dodwell 2012: 145, Marshall 2011: 26), these deposits probably represent re-deposited pyre material rather than pyre sites.

5.7.3 Deposit types

5.7.3.1 Inhumations

More than half (n=66, 55.4%) of burial features with Early Bronze Age inhumations contained preserved human bones, which include 30 (73.2%) crouched inhumation, six (14.6%) extended inhumations and five (12.2%) disarticulated inhumations. In 25 (37.9%) cases the skeletons were too poorly preserved to identify burial position. The position and orientation of Early Bronze Age inhumations were variable (Table 5.9), although the head was most frequently positioned on the north side of the burial feature (n=17, 60.7%). Of the six extended inhumations, three (50.0%) had been placed on their back (Allt Cunedda: Anon 1851, Corston Beacon: Fox and Grimes 1928, Orseddwen: Wynne-Ffoulkes 1851a), and three (50.0%) were too decayed to assess their position. An equal number of crouched inhumations had been placed on their right side (n=11) and left side (n=11), and the majority of crouched inhumations faced east (n=11, 50.0%) or west (n=8, 35.4%) (Table 5.9).

Table 5.9: Position and orientation of EBA inhumations (N=28 inhumations).

Head position	*Total*	*Body position*		*Body facing*				
		Right side	*Left side*	*North*	*NE*	*East*	*SW*	*West*
North	17	6	8	-	-	7	-	7
South	6	4	1	-	-	4	-	1
NW	3	1	1	-	1	-	1	-
West	2	-	1	1	-	-	-	-
Total	28	11	11	1	1	11	1	8

5.7.3.2 Cremation deposits

Of the total sample of Early Bronze Age cremation deposits, 363 (91.0%) deposits represented burials and 36 (9.0%) token deposits of cremated bones. Five of these – Candleston Cist (Ward 1919: 329), Cwm Car (Ward 1902: 27), Groeswen (Savory 1950: 39), Ysgwennant pit 1 (Day and Savory 1972: 35) and Ystradfellte (Holloway 1965: 6) – represent token cremation deposits which probably accompanied inhumation burials. These were found scattered on the cist floor (Candleston Cist), inside a pottery vessel in the cist (Cwm Car), inside the cist (Groeswen and Ystradfellte) or within the burial pit fill (Ysgwennant). The osteological analysis of these deposits revealed that one individual was represented in each deposit, and that all parts of the skeleton were represented (Appendices F and G).

188 (47.1%) cremation deposits were placed inside pottery vessels, whilst 211 (52.9%) were unurned (Appendix F). Twenty-one unurned cremation deposits were found to be tightly packed and formed a well-delimited deposit within the burial feature, which would suggest that they had been placed within some form of organic container such as a bag (n=17 deposits) or a wooden box (n=4 deposits).

127 (31.8%) cremation deposits were recorded as to have included charcoal. Only 27 (5.8%) deposits were reported as clean of any ash material. This would therefore suggest that Early Bronze Age cremation rituals in Wales most commonly involved the collection and deposition of both cremated human bones and pyre debris, and that in only a few cases the charcoal had been removed from the cremation deposits. However, as no information is available on the presence or absence of pyre debris for most cremation deposits (n=245 deposits, 61.4%), it is possible that this pattern does not represent a genuine trend within the burial data.

5.7.4 Demography

5.7.4.1 Inhumations

Demographic data was available for 55 of the 66 Early Bronze Age inhumations with preserved bones; 29 (52.7%) of these bone deposits were examined as part of this analysis (ID No. 11-39 in Appendix F).

The majority (n=48, 88.9%) of inhumation burials contained one individual. Six (11.1%) deposits contained multiple individuals which include four double inhumations – Frainslake (Laws 1888: 29), Plas Heaton (Wynne-Ffoulkes 1851b: 276), Riley's Tumulus C5 (ID No. 35-36 in Appendix F) and Tynewydd (ID No. 19-20 in Appendix F) – and two deposits with four individuals (Hendre: Brassil and Gibson 1999 and Ludchurch: Grimes 1928). Two non-adults were identified in the bone deposits recovered at Crown Farm (Davies 1929a), but it is unclear whether these bones came from one or both of the cists. The skeletons from three double inhumations – Plas Heaton, Riley's Tumulus C5 and Tynewydd – were interpreted as to having been deposited simultaneously as no evidence for the re-opening of burial features was recorded (no contextual data is available for Frainslake). Grimes (1928) suggested that at least three secondary inhumations were added to the Ludchurch cist after the primary burial of an adult female, although no evidence is provided to support this theory (the contents of the cist had previously been disturbed and the bones were described as poorly preserved).

Based on the osteological analysis of 29 skeletons (section 5.2) and on descriptions of skeletal elements in excavation reports for the remainder of burials, Early Bronze Age inhumations do not appear to have included additional body parts. 54 skeletons (29 examined in this study and 25 from excavation reports) were reported as incomplete (no description was available for 10 skeletons). In most cases, the missing skeletal elements were thought to have been destroyed by acid soils (n=29 skeletons) or due to antiquarian or modern disturbances (n=15 skeletons) (in 10 cases the possible causes for bone loss were not discussed). In two instances (Tandderwen and Twyn Bryn Glas), the inhumations were disturbed by the insertion of further burials in the Early Bronze Age period. Two deposits (Llanbabo and Sutton 268') contained only a skull. However, as neither excavation reports provide a detailed description of the burial environment, it is not possible to assess whether these represent examples of a deliberate burial practice, or whether the missing post-cranial skeletons were destroyed by acid soils. The disarticulated inhumation burial from Hendre contained the partial remains (922g of disarticulated and fragmented bones) from one adult male and three children recovered from a shallow and poorly defined pit in a natural mound (Brassil and Gibson 1999: 96). The missing skeletal elements were interpreted as evidence of pre-depositional excarnation. However, it is also possible that the bone loss occurred through post-depositional processes such as erosion by acid soils. The disarticulated inhumation from Pant-y-butler barrow 2 (burial 3) (ID No. 28 in Appendix F) contained the remains of at least one adult placed in a pit cut into a round barrow. Due to the high level of surface erosion on bone surfaces (section 5.2.2.2), it was not possible to examine whether the deposit contained additional or missing skeletal elements.

Of the sample of Early Bronze Age inhumations with demographic data, 56 of the 64 individuals identified could be placed within broad age categories, which include 18 (32.1%) non-adults and 38 (67.9%) adults (Table 5.10, Figure 5.9). A greater proportion of adults than non-adults were represented in inhumation burials (67.9%) than in cremation deposits (60.3%) (section 5.7.4.2), but this difference is not statistically significant ($\chi^2_{(1)} = 1.162$, $p = 0.281$). Of the adult sample, 27 (71.1%) individuals were sexed, which include 20 (74.1%) males and seven (25.9%) females, with a sex ratio of 1:2.9 in favour of males. The difference between the number of males and females represented in Early Bronze Age inhumation burials is significant ($\chi^2_{(1)} = 5.259$, $p = 0.012$). It is not possible due to the small size of the aged sample to determine whether there was a pattern between body position and sex (Table 5.11).

Table 5.10: Early Bronze Age inhumations by age and sex (N=64 individuals).

Age	*Male*	*?male*	*Female*	*?female*	*Unsexed*	*Total*
Neonate	-	-	-	-	-	-
Infant	-	-	-	-	-	-
Young child	-	-	-	-	5	5
Young/older child	-	-	-	-	1	1
Older child	-	-	-	-	2	2
Adolescent	-	-	-	-	2	2
Non-adult	-	-	-	-	8	8
Total non-adult	-	-	-	-	18	18
Young adult	-	-	-	1	1	2
Middle adult	5	1	1	-	2	9
Middle/older adult	1	-	-	-	-	1
Older adult	2	-	1	1	-	4
Adult	10	1	2	1	8	22
Total adult	18	2	4	3	11	38
Indeterminate	-	-	-	-	8	8
Total	18	2	4	3	37	64

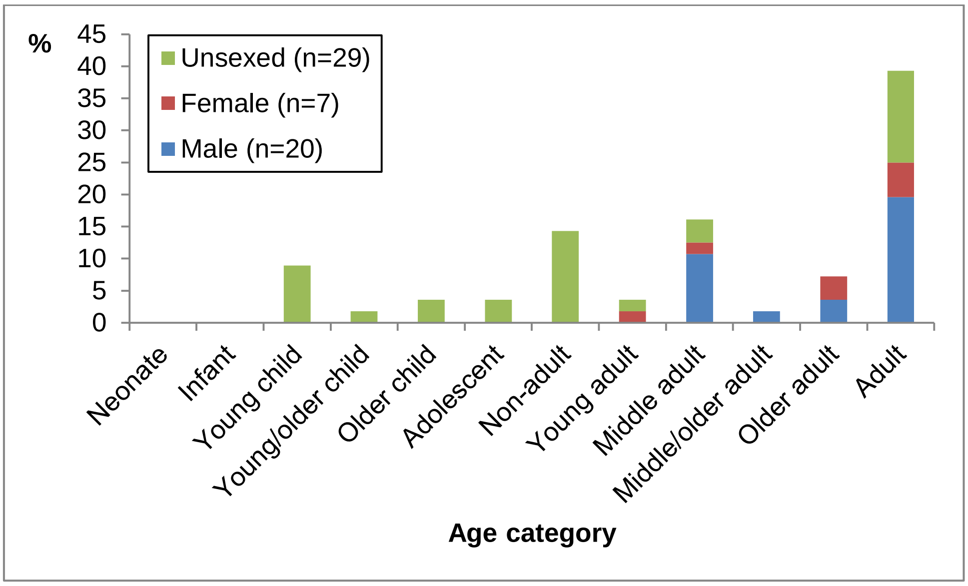

Figure 5.9: Demographic data for Early Bronze Age inhumation burials (N=56 individuals).

Table 5.11: Position of Early Bronze Age inhumations in terms of sex (N=16 adult inhumations).

Body position	*Male*	*Female*	*Unsexed*
Left	9	-	1
Right	3	1	2

5.7.4.2 Cremation deposits

Demographic data was available for 293 (73.4%) Early Bronze Age cremation deposits, of which 184 (62.8%) were examined in this analysis (ID No. 40-223 in Appendix F).

Almost three-quarters (n=212, 72.4%) of Early Bronze Age cremation deposits contained one individual, whilst 81 (27.6%) cremation deposits contained multiple individuals, most of which contained two (n=65) and three (n=13) individuals (Figure 5.10). The largest number of individuals were recorded in Steynton pit 268157 (MNI=5: Fotaki and Holst 2014), Tandderwen cremation 1 (MNI=5: Brassil *et al* 1991) and Pillar of Eliseg cist 31 (MNI=6: ID No. 202 in Appendix F). A significantly greater number of cremation deposits contained multiple individuals than inhumation burials ($\chi^2_{(1)} = 5.635$, $p = 0.01$).

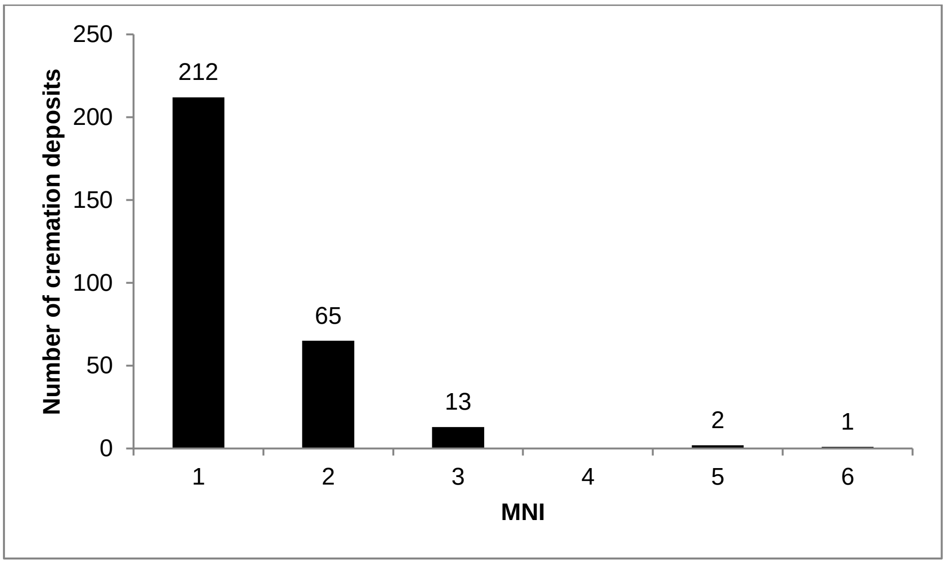

Figure 5.10: Frequencies of MNI for Early Bronze Age cremation deposits (N=293 cremation deposits).

Of the sample of Early Bronze Age cremation deposits with demographic data, 368 of the 397 individuals could be placed within broad age categories, of which 146 (39.7%) were non-adults and 222 (60.3%) adults (Table 5.12, Figure 5.11). Of the adult sample, 92 (41.4%) were sexed, 43 (45.7%) of which were males and 49 (53.3%) females, with a sex ratio of 1:1.1 in favour of females. There is no significant difference between the number of males and females represented in Early Bronze Age cremation deposits ($\chi^2_{(1)} = 0.391$, $p = 0.532$).

Table 5.12: Early Bronze Age cremation deposits by age and sex (N=397 individuals; M = male, F = female, ? = unsexed).

Age	*M*	*?M*	*??M*	*F*	*?F*	*??F*	*?*	*Total*
Foetus/neonate	-	-	-	-	-	-	1	1
Infant	-	-	-	-	-	-	16	16
Infant/young child	-	-	-	-	-	-	5	5
Young child	-	-	-	-	-	-	50	50
Young/older child	-	-	-	-	-	-	12	12
Older child	-	-	-	-	-	-	21	21
Adolescent	-	-	-	-	-	-	14	14
Non-adult	-	-	-	-	-	-	27	27
Total non-adult	-	-	-	-	-	-	146	146
Young adult	2	3	-	4	1	2	17	29
Young/middle adult	-	1	-	1	-	-	3	5
Middle adult	1	1	3	-	1	2	11	19
Middle/older adult	1	1	1	-	-	2	5	10
Older adult	8	2	4	2	7	5	11	39
Adult	7	4	4	8	5	9	83	120
Total adult	19	12	12	15	14	20	130	222
Indeterminate	-	-	-	-	-	-	29	29
Total	19	12	12	15	14	20	305	397

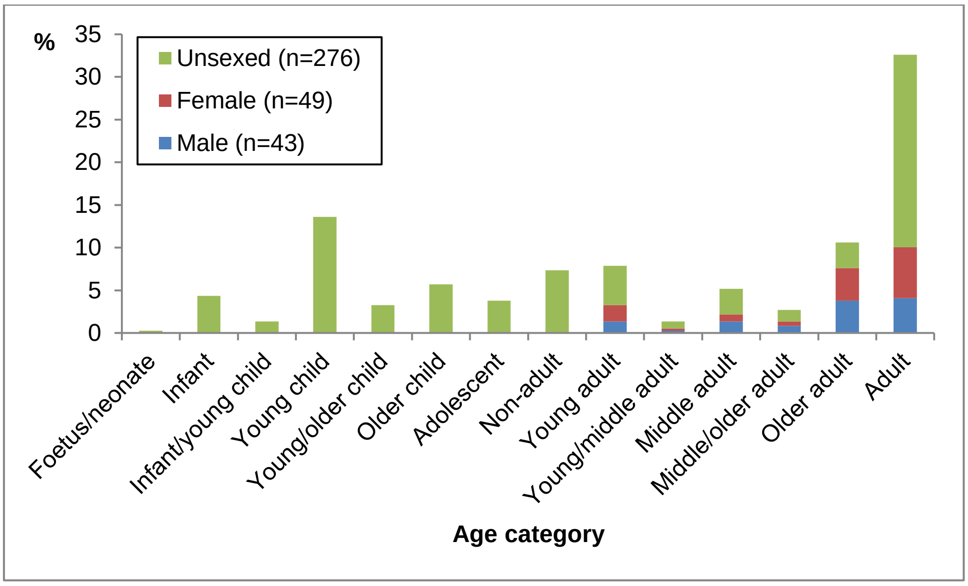

Figure 5.11: Demographic data for Early Bronze Age cremation deposits (N=368 individuals).

The sample of Early Bronze Age cremation deposits contained a relatively high number of older adults (9.8%: Figure 5.11). Walsh (2013: 124) found a lower proportion of older adults (1%) from the sample of Early Bronze Age cremation deposits from north-east England. The over-representation of older adults may be due to methodological issues associated with the use of degenerative lesions, such as those associated with osteoarthritis, as broad indicators of age (section 4.3.7). However, as a variety of factors other than age may have had an impact on the severity and distribution of osteoarthritic lesions, osteoarthritis was never used as the only indicator of age during the analysis (section 4.3.7). Despite this, it is possible that age may have been over-estimated in older individuals with more extensive degenerative lesions in this analysis, especially between the middle and older adult categories. This is supported by the fact that if age categories for older individuals (middle and older adults) are combined, the proportion of older adults from the Welsh sample (17.1%) compares to the sample from north-east England examined by Walsh (2013: 124) (18.0%).

The majority (n=186, 70.2%) of Early Bronze Age cremation deposits contained one non-adult or one adult (Table 5.13). Deposits with multiple individuals most commonly contained one non-adult and one adult (n=47, 17.7%). A significantly greater proportion of adults (59.0%) than non-adults (37.9%) were deposited on their own ($\chi^2_{(1)} = 15.042$, $p < 0.001$). Non-adults on the other hand were more commonly found accompanied by at least one individual: 62.1% of deposits with non-adults contained multiple individuals compared to 41.0% of deposits with adults.

Table 5.13: Patterns in demographic data in Early Bronze Age cremation deposits (N=265 cremation deposits).

	No. of deposits	*%*
One non-adult	55	20.8
One adult	131	49.4
Two non-adults	7	2.6
Two adults	9	3.4
One non-adult with one adult	47	17.7
One non-adult with two adults	6	2.3
Two non-adults with one adult	7	2.6
Multiple non-adults with multiple adults	3	1.1
Total	265	100

5.7.5 Grave goods

5.7.5.1 Inhumations

Of the sample of Early Bronze Age inhumations, 68 (58.1%) were accompanied by grave goods. The most common types of artefacts associated with inhumation burials are pottery vessels (Beaker and Food Vessel), flint objects (arrowhead, flake, knife and scraper) and bronze objects (armlet, dagger, knife and spearhead) (Table 5.14).

Table 5.14: Types of artefacts associated with Early Bronze Age inhumations (B&T = barbed-and-tanged).

Material	*Artefact type*	*No. of burials*	*% of EBA inhumations*
Bone	Bead	1	0.9
Amber	Bead	1	0.9
Jet & lignite	Button	3	2.6
	Necklace	2	1.7
	Ring	1	0.9
	Total	6	5.1
Gold	Cape	1	0.9
	Ring	1	0.9
	Total	2	1.7
Flint	Arrowhead (B&T)	7	5.0
	Core	1	0.9
	Flake	9	7.7
	Knife	10	8.5
	Scraper	1	0.9
	Total	28	23.9
Stone	Bead	1	0.9
	Decorated stone	1	0.9
	Hammer pebble	1	0.9
	‘sponge-fingers'	1	0.9
	Total	4	3.4
Bronze	Armlet	1	0.9
	Awl	2	1.7
	?bracelet	1	0.9
	Dagger	3	2.6
	Knife	2	1.7
	‘ornaments’	1	0.9
	Spearhead	1	0.9
	Total	11	9.4

Table 5.14 (cont'd): Types of artefacts associated with Early Bronze Age inhumations (B&T = barbed-and-tanged).

Material	*Artefact type*	*No. of burials*	*% of EBA inhumations*
Pottery	Beaker	45	38.5
	Food Vessel	2	1.7
	Unknown style	6	5.1
	Total	53	45.3

Less than half (n=53, 45.3%) of Early Bronze Age inhumations were associated with pottery vessels, which include 45 (38.5%) with Beakers, two (1.7%) with Food Vessels, and six (5.1%) with unknown types of pottery vessels (Table 5.14). 64 (54.7%) Early Bronze Age inhumations were not accompanied by any ceramic grave goods. The most common types of pottery vessels associated with Early Bronze Age inhumations are Beakers (Figure 5.12). The types of Beakers associated with these burials are part of the 'emergent packages' of grave goods from the 'fission horizon' of Beaker burials (between the 22nd-20th centuries BC) which include Long-Necked (LN), Short-Necked (SN), 'S'-profile (SP) Beakers (section 3.4.1.1 for a summary of Welsh 'fission horizon' Beakers; Needham 2005: 206). Two inhumation burials were accompanied by Food Vessels, a Bowl Food Vessel from the Candleston Castle cist (Ward 1919: 329), and a Food Vessel Urn with the crouched inhumation from the Linney Burrows round barrow (Gordon-Williams 1926: 188-189). Pottery vessels were most commonly placed around the upper body (n=10, 62.5%) than the lower body (n=4, 25.0%) (Table 5.15). The sample is too small to examine patterns between the position of the pottery vessel and demographic data (Table 5.16).

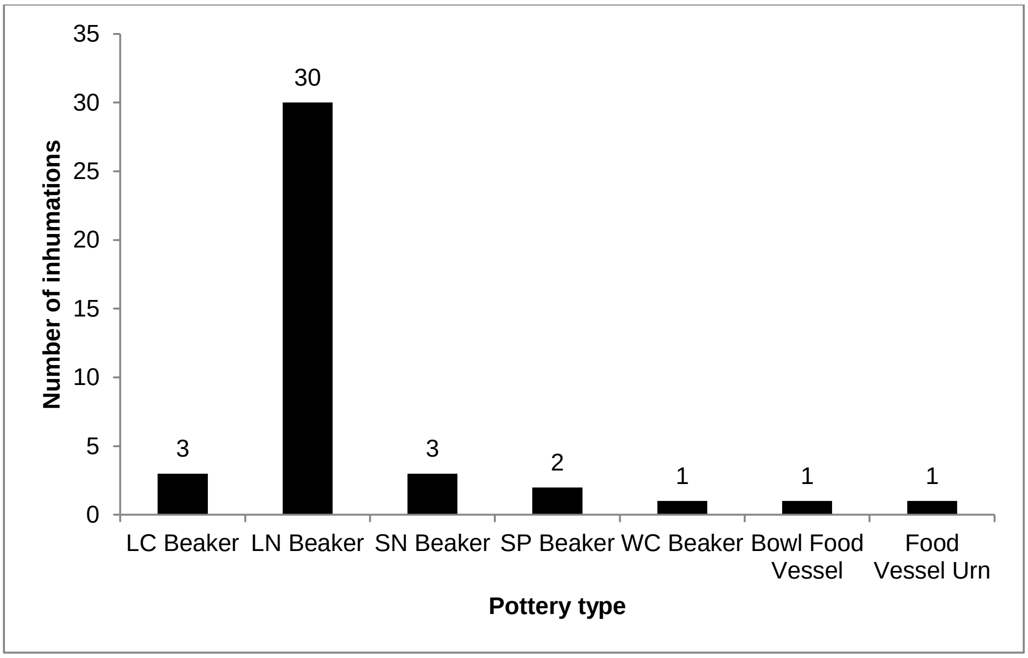

Figure 5.12: Frequency of pottery types from Early Bronze Age inhumations (LC = Low-Carinated, LN = Long-Necked, SN = Short-Necked, SP = 'S'-profile, WC = Weak-Carinated) (N=41; 12 pottery vessels of unknown styles not included).

Table 5.15: Position of pottery vessels in Early Bronze Age inhumation burials (N=16 inhumations).

Position of vessel	*No. of inhumations*	*%*
Near head	5	31.3
Behind head	3	18.8
Back of neck	1	5.3
Near left shoulder	1	5.3
Behind lower back	1	5.3
Behind spine	1	5.3
Near feet	4	25.0
Total	16	100

Table 5.16: Position of pottery vessels in Early Bronze Age inhumations in terms of age and sex (N=10 inhumations).

	Age		*Sex*		
Vessel position	*Non-adult*	*Adult*	*Male*	*Female*	*Unsexed*
Upper body	1	6	4	1	2
Lower body	-	3	2	-	1

The analysis of patterns between demographic data and types of grave goods is restricted by the fact that only 17 (55.7%) artefact types were associated with demographic data (Table 5.17). Furthermore, the proportions of artefact types by age (Figure 5.13) and sex (Figure 5.14) are probably of limited value as all but one type of artefacts (Beakers) were represented by a sample of five or less individuals (Table 5.17)

A greater proportion of adults (n=25, 65.8%) than non-adults (n=7, 38.9%) were accompanied by grave goods; however, this difference is not statistically significant ($\chi^2_{(1)}$ = 3.609, p = 0.057). The only types of artefacts found associated with non-adults were beads, Beakers (SN, SP and LN Beakers), bronze 'ornaments' and a hammer pebble (Table 5.17, Figure 5.13). By contrast a wider range of artefact types were associated with adult inhumations, which also included bronze awls and daggers, flint flakes, gold objects (cape), jet and lignite buttons and necklace, and knives (bronze and flint) (Figure 5.13). There was no significant difference between the numbers of non-adults and adults accompanied by pottery vessels ($\chi^2_{(1)}$ = 1.07, p = 0.3) (Table 5.17).

Table 5.17: Number of individuals by age and sex associated with artefacts in Early Bronze Age inhumations (N=117 inhumations; B&T = barbed-and-tanged, LC = Low-Carinated, LN = Long-Necked, SN = Short-Necked, SP = 'S'-profile, WC = Weak-Carinated).

Material	*Artefact type*	*Age*		*Sex*	
		Non-adult	*Adult*	*Male*	*Female*
Bone	Bead	-	-	-	-
Amber	Bead	-	1	1	-
Gold	Cape	-	1	1	-
Jet & lignite	Button	-	1	1	-
	Necklace	-	1	-	-
	Ring	-	-	-	-
	Total	-	2	1	-
Flint	Arrowhead (B&T)	-	-	-	-
	Core	-	-	-	-
	Flake	-	5	2	2
	Knife	-	5	3	-
	Scraper	-	-	-	-
	Total	-	10	5	2
Stone	Bead	1	-	-	-
	Decorated stone	-	-	-	-
	Hammer pebble	1	1	-	-
	'sponge-fingers'	-	-	-	-
	Total	2	1	-	-

Table 5.17 (cont'd): Number of individuals by age and sex associated with artefacts in Early Bronze Age inhumations (N=117 inhumations; B&T = barbed-and-tanged, LC = Low-Carinated, LN = Long-Necked, SN = Short-Necked, SP = 'S'-profile, WC = Weak-Carinated).

Material	*Artefact type*	*Age*		*Sex*	
		Non-adult	*Adult*	*Male*	*Female*
Bronze	Armlet	-	-	-	-
	Awl	-	2	-	2
	?bracelet	-	-	-	-
	Dagger	-	2	2	-
	Knife	-	1	1	-
	'ornaments'	1	-	-	-
	Spearhead	-	-	-	-
	Total	1	5	3	2
Pottery	LC Beaker	-	1	1	-
	LN Beaker	1	13	5	3
	SN Beaker	2	-	-	-
	SP Beaker	2	2	1	1
	WC Beaker	-	-	-	-
	Bowl Food Vessel	-	-	-	-
	Food Vessel Urn	-	-	-	-
	Unknown style	-	2	1	1
	Total	5	18	8	5

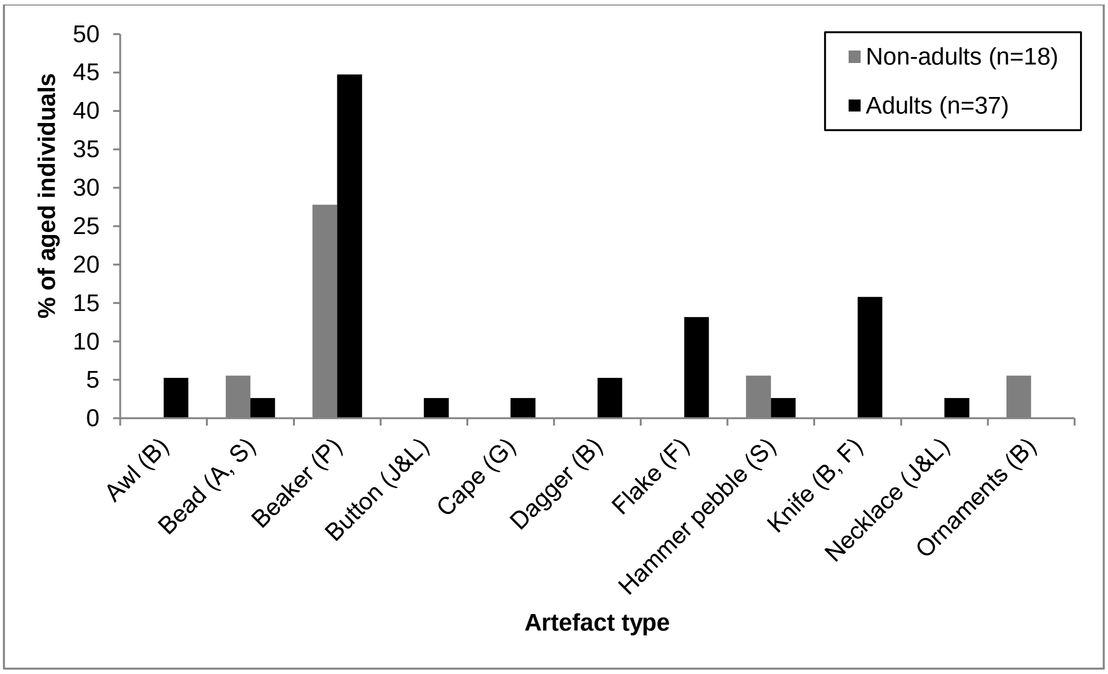

Figure 5.13: Proportions of non-adults and adults from Early Bronze Age inhumation burials associated with each type of artefacts (N=56 individuals) (A = amber, B = bronze, F = flint, G = gold, J&L = jet and lignite, P = pottery, S = stone).

There was no significant difference between the number of males and females associated with grave goods (p = 1.0; Fisher's Exact Test, FET) (Table 5.17). However, a number of sex-based differences have been identified in terms of artefact types: bronze daggers and knives (flint and bronze) were only found associated with males, whilst bronze awls were only found with females (Table 5.17, Figure 5.14). Although the amber beads, gold cape and jet buttons appear to be only associated with males (Figure 5.14), this pattern is based on only two burial deposits, the Merddyn Gwyn crouched inhumation with a LN Beaker, bronze dagger, flint flake and jet bead (Hughes 1908) and the Mold inhumation with a gold cape and amber beads (Davies 1949: 256-261). A greater proportion of female inhumations (28.6%) than male inhumations (10.0%) were associated with flint flakes. There was no significant difference between the proportions of males and females associated with pottery vessels (p = 0.636; FET) (Table 5.17).

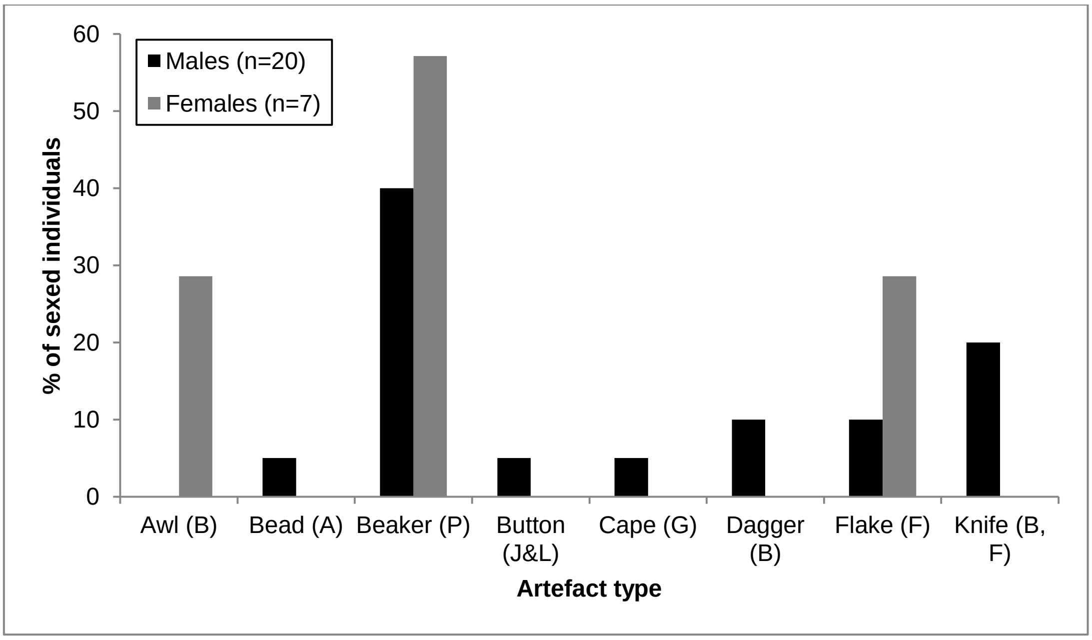

Figure 5.14: Proportions of males and females from inhumation burials with each artefact type (N=27 individuals) (A = amber, B = bronze, F = flint, G= gold, J&L = jet and lignite, P = pottery, S = stone).

5.7.5.2 Cremation deposits

Of the total sample of Early Bronze Age cremation deposits, 246 of the 399 (61.7%) deposits were associated with artefacts. Pottery (especially Collared Urns and Food Vessels), flint (especially flakes and knives) and bronze objects were the most common types of artefacts found associated with cremation deposits (Table 5.18).

Table 5.18: Types of artefacts associated with Early Bronze Age (EBA) cremation deposits (N=399 cremation deposits).

Material	*Artefact type*	*No. of deposits*	*% of EBA cremation deposits*
Bone	Bead	2	0.5
	Pendant	1	0.3
	Pin	9	2.3
	Pommel	6	1.5
	Unknown	1	0.3
	Total	19	4.8
Amber	Bead	1	0.3
Gold	Bead	1	0.3
Jet	Bead	3	0.8
Flint	Arrowhead (B&T)	6	1.5
	Arrowhead (leaf)	1	0.3
	Blade	2	0.5
	Core	2	0.5
	Fabricator	2	0.5
	Flake	25	5.3
	Knife	24	5.0
	Point	1	0.3
	Scraper	5	1.3
	Unknown	6	1.5
	Total	74	18.5
Stone	Arrowshaft straighteners	1	0.3
	Bead	2	0.5
	Flake	1	0.3
	Hammerstone	1	0.3
	Hone	1	0.3
	Knife	1	0.3
	Marcasite 'cup'	1	0.3
	Pendant	2	0.5
	‘stopper'	1	0.3
	Stud	1	0.3
	Total	12	3.0

Table 5.18 (cont'd): Types of artefacts associated with Early Bronze Age (EBA) cremation deposits (N=399 cremation deposits).

Material	*Artefact type*	*No. of deposits*	*% of EBA cremation deposits*
Bronze	Awl	6	1.5
	Axe	2	0.5
	Blade	2	0.5
	Bracelet	1	0.3
	Chisel	1	0.3
	Dagger	3	0.8
	Knife	5	1.3
	Pin	5	1.3
	Razor	2	0.5
	Rivet	1	0.3
	Tweezers	1	0.3
	Unknown	5	1.3
	Total	34	8.5
Pottery	Beaker	3	0.8
	Clay bead	1	0.3
	Collared Urn	110	27.6
	Cordoned Urn	10	2.5
	'ear-studs'	1	0.3
	Faience bead	4	1.0
	Food Vessel	52	13.0
	Pygmy Cup	33	8.3
	Total	214	53.6

More than half (n=213, 53.4%) of cremation deposits were associated with a pottery vessel (Appendix F). 188 (47.1%) cremation deposits had been placed inside a pottery vessel, and 25 (5.3%) deposits were accompanied by a pottery vessel. 186 (45.6%) cremation deposits were not accompanied by any ceramic grave goods. The most common type of pottery vessels associated with cremation deposits were Collared Urns, the majority of which were of the 'Early' and 'Middle' styles (Table 5.19). 190 (47.6%) cremation deposits were associated with a single pottery vessel, around half (n=97, 51.1%) of which were in an inverted position. 23 (5.8%) cremation deposits were associated with two pottery vessels, 14 (3.5%) with a Collared Urn, Cordoned Urn or Food Vessel Urn and a Pygmy Cup. Six (1.5%) deposits were associated with two Collared Urns, Cordoned Urns or Food Vessel Urns, usually inverted over one another, as for example the double-urn burials at Fan y Big (Briggs *et al* 1990) and Tandderwen (cremation 5) (Brassil *et al* 1991), or placed on top of the other, as for example the Early Collared Urn inverted onto a Vase Food Vessel at Steynton (pit 268157) (Barber *et al* 2014: 10).

Table 5.19: Types of pottery vessels associated with Early Bronze Age cremation deposits (N=399 cremation deposits).

Pottery type	*Pottery sub-type*	*No.*	*% of EBA cremation deposits*
Beaker	Low-Carinated	1	0.3
	S-Profile	1	0.3
	Unknown	1	0.3
	Total	3	0.8
Collared Urn	Early	30	7.5
	Middle	50	12.5
	Late	13	3.3
	Unknown	17	4.3
	Total	110	27.6
Cordoned Urn		10	2.5
Food Vessel	Bowl	1	0.3
	Vase	9	2.3
	Urn	35	8.8
	Unknown	7	1.8
	Total	52	13.0
Pygmy Cup	Biconical	12	3.0
	Bipartite	2	0.5
	Globular	5	1.3
	Miniature Collared Urn	3	0.8
	Miniature Bowl Food Vessel	2	0.5
	Miniature Vase Food Vessel	4	1.0
	Splayed Cup	3	0.8
	Vertical-sided Cup	1	0.3
	Unknown	1	0.3
	Total	33	8.3

42 (89.4%) artefact types from Early Bronze Age cremation deposits were associated with demographic data (Table 5.20). Due to the comingled nature of cremation deposits, each individual from deposits with multiple individuals was assumed to have been accompanied by the object(s) found associated with the deposit. However, the analysis of patterns between demographic data and

types of grave goods is restricted by the fact that 28 (65.7%) artefact types were only represented by five individuals or less (Table 5.20).

Table 5.20: Number of individuals by age and sex associated with artefacts in Early Bronze Age cremation deposits (N=399 cremation deposits; B&T = barbed-and-tanged).

Material	*Artefact type*	*Age*		*Sex*	
		Non-adult	*Adult*	*Male*	*Female*
Bone	Bead	1	3	2	-
	Pendant	2	-	-	-
	Pin	7	8	2	3
	Point	-	1	1	-
	Pommel	2	8	2	2
	Total	12	20	7	5
Amber	Bead	1	2	1	-
Gold	Bead	1	1	-	1
Jet & lignite	Bead	2	4	1	1
Flint	Arrowhead (B&T)	3	6	1	1
	Arrowhead (leaf)	1	-	-	-
	Blade	-	1	-	-
	Core	3	-	-	-
	Fabricator	4	1	-	-
	Flake	13	16	3	5
	Knife	20	18	4	5
	Point	1	1	1	-
	Scraper	2	2	2	-
	Unknown	1	7	3	1
	Total	48	52	14	12
Stone	Arrowshaft straightener	1	2	1	-
	Bead	1	1	1	-
	Flake	-	2	1	1
	Hammerstone	-	-	-	-
	Hone	-	1	1	-
	Knife	-	1	1	1
	Marcasite ‘cup’	2	1	-	-
	Pendant	2	1	1	-
	Stopper	1	-	-	-
	Stud	1	-	-	-
	Total	8	9	7	2

Table 5.20 (cont'd): Number of individuals by age and sex associated with artefacts in Early Bronze Age cremation deposits (N=399 cremation deposits; B&T = barbed-and-tanged).

Material	*Artefact type*	*Age*		*Sex*	
		Non-adult	*Adult*	*Male*	*Female*
Bronze	Awl	3	4	-	1
	Axe	1	2	1	-
	Blade	-	1	-	-
	Bracelet	-	-	-	-
	Chisel	-	-	-	-
	Dagger	-	3	2	1
	Knife	1	3	3	-
	Pin	2	6	3	2
	Razor	-	1	1	-
	Rivet	-	1	-	1
	Tweezers	-	-	-	-
	Unknown	2	2	1	2
	Total	9	23	11	7
Pottery	Beaker	-	-	-	-
	Collared Urn	57	71	17	16
	Cordoned Urn	2	5	2	1
	'ear-studs'	2	1	-	-
	Faience beads	7	4	2	1
	Food Vessels	29	27	5	6
	Pygmy Cups	17	16	3	4
	Total	114	124	29	28

The difference between the proportions of non-adults (n=113, 77.4%) and adults (n=145, 65.3%) with grave goods is statistically significant ($\chi^2_{(1)}$ = 5.135, p = 0.013). Non-adults were more frequently accompanied by arrowheads, awls, beads, cups, flint cores and fabricators, knives, pendants, pins, pottery vessels (except Cordoned Urns), scrapers, stone flakes and studs than adults (Figure 5.15). The greatest differences in proportions between age categories were for beads (8.9% of non-adults versus 5.8% of adults), cups (13.0% of non-adults versus 7.7% of adults), Food Vessels (19.9% of non-adults versus 12.2% of adults) and knives (14.4% of non-adults versus 9.9% of adults). However, none of these differences were statistically significant (beads: $\chi^2_{(1)}$ = 0.578, p = 0.447; cups: $\chi^2_{(1)}$ = 2.863, p = 0.091; knives: $\chi^2_{(1)}$ = 1.708, p = 0.191), except for Food Vessels ($\chi^2_{(1)}$ = 4.048, p = 0.044).

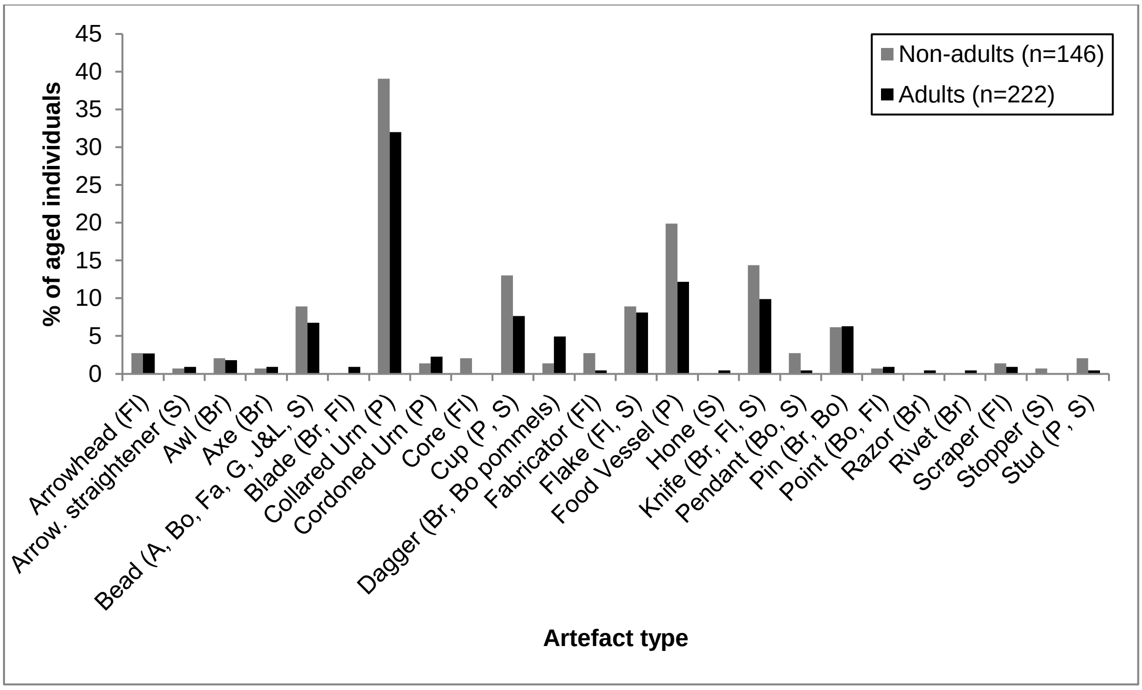

Figure 5.15: Proportions of non-adults and adults from Early Bronze Age cremation deposits associated with each type of artefacts (N=368 individuals) (A = amber, Bo = bone, Br = bronze, Fa = faience, Fl = flint, G = gold, J&L = jet and lignite, P = pottery, S = stone).

Three types of bronze artefacts – blades, razors and rivets – were only found associated with adults (Figure 5.15). However, as each of these artefacts were only represented by one individual (Table 5.20), it is not possible to assess whether this represents a genuine pattern within the burial data. Another type of bronze object more frequently associated with adults (5.0%) than non-adults (1.4%) is the bronze dagger. Adults were also more frequently accompanied by arrowshaft straighteners, bronze axes, Cordoned Urns, hones and points than non-adults (Figure 5.15), although the samples were too small to assess if these patterns were significant (Table 5.20).

There were no significant differences between the proportions of males (n=35, 81.4%) and females (n=33, 67.3%) associated with grave goods ($\chi^2_{(1)}$ = 2.344, p = 0.126). Seven types of artefacts were only found associated with males: arrowshaft straighteners, axes, hones, pendants, points, razors and scrapers (Figure 5.16). By contrast bronze awls and rivets were the only two types of objects only associated with females (Figure 5.16), although these patterns are only based on a small sample of individuals (Table 5.20). Males were more frequently accompanied by arrowheads, daggers, knives and pins than females

(Figure 5.16). Beads, Collared Urns, Cordoned Urns were more commonly found associated with males whilst and cups (Pygmy Cups), flakes and Food Vessels were more frequently found with females (Figure 5.16).

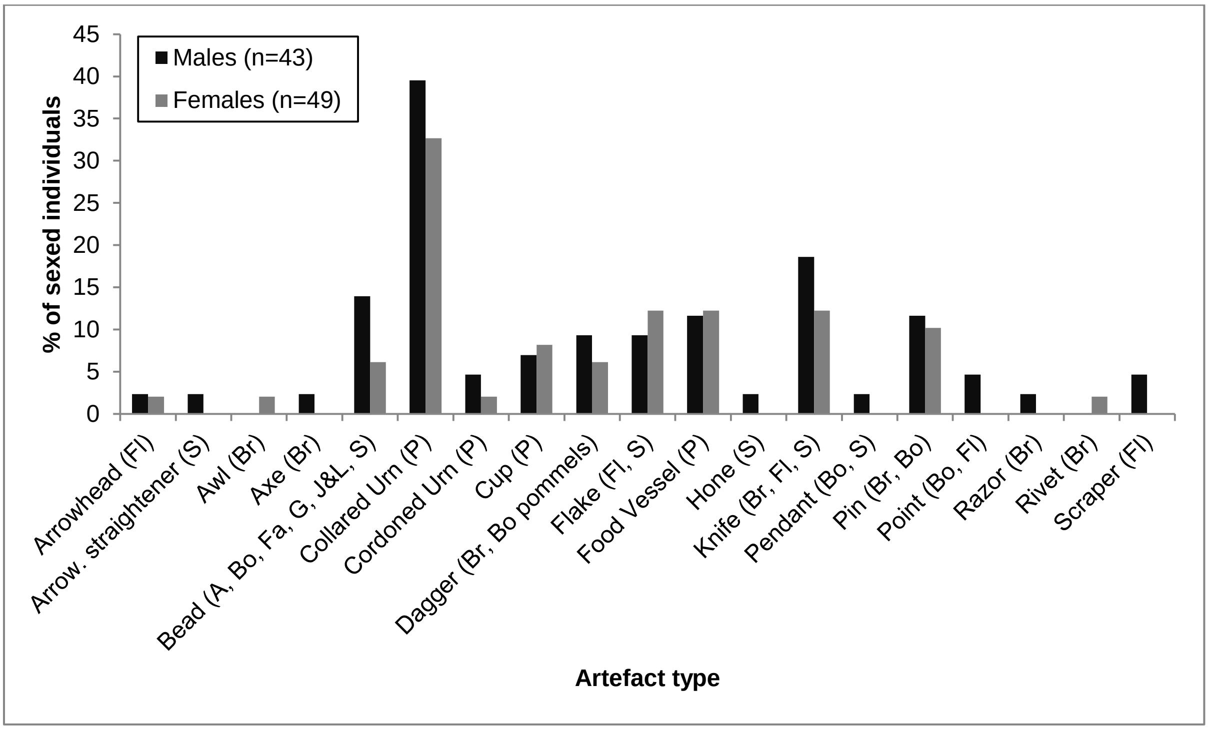

Figure 5.16: Proportions of males and females from Early Bronze Age cremation deposits associated with each type of artefacts (N=92 individuals) (A = amber, Bo = bone, Br = bronze, Fa = faience, Fl = flint, G = gold, J&L = jet and lignite, P = pottery, S = stone).

113 of the sample of urned cremation deposits (Appendix F) contained data about the position of the pottery vessel as well as demographic data. Of this sample, a slightly higher proportion of upright pottery vessels (n=22, 64.7%) contained one individual compared to inverted vessels (n=46, 60.5%) (Table 5.21). Conversely, a slightly higher proportion of inverted urns (n=30, 39.5%) contained two or more individuals than upright urns (n=12, 35.3%) (Table 5.21). However, there is no significant association between the position of pottery vessels (inverted versus upright) and MNI (deposits with one individual versus deposits with two or more individuals) ($\chi^2_{(1)}$ = 0.174, p = 0.677). Adults were more frequently found in inverted urns (n=57, 69.5%) than non-adults (n=47, 65.3%), whilst non-adults were more commonly placed in upright vessels (n=24, 33.3%) than adults (n=22%, 25.8%) (Table 5.22). However, the association between the position of pottery vessels and age is not statistically significant

($\chi^2_{(1)}$ = 0.624, p = 0.430). There is also no significant association between pottery vessel position (inverted versus upright) and sex (male versus female) ($\chi^2_{(1)}$ = 0.010, p = 0.920). The numbers of aged and sexed individuals were too low to examine patterns in the demographic data for pottery vessels which were deposited on their side (Table 5.22).

Table 5.21: Position of pottery vessel in terms of minimum number of individuals (MNI) (N=113 cremation deposits).

	Position of pottery vessel		
MNI	*Inverted*	*Upright*	*On its side*
1	46	22	2
2	25	10	1
3	5	1	-
4	-	-	-
5	-	1	-
Total	76	34	3

Table 5.22: Position of pottery vessel in terms of age and sex (N=113 cremation deposits).

Vessel position	*Age*		*Sex*		
	Non-adult	*Adult*	*Male*	*Female*	*Unsexed*
Inverted	47	57	18	14	72
Upright	24	22	6	5	35
On its side	1	3	-	1	3
Total	72	82	24	20	110

5.8 Middle Bronze Age (*c.* 1700-1200 BC)

5.8.1 Monument types

At least 50 cremation deposits from 22 Middle Bronze Age sites have been identified in Wales (Appendix F). Less than half (n=23, 45.0%) of cremation deposits came from burial mounds (six round barrows and six burial cairns). Five (10.0%) deposits were associated with a standing stone (Bridgend: Lewis 1966, Longstone Field: Williams 1989, Plas Gogerddan: Murphy 1992, Rhos y Clegyrn: Lewis 1974) and two (4.0%) with a stone circle (Penmaenmawr 280). Seven (14.0%) deposits came from three cremation cemeteries, Capel Eithin (White and Smith 1999) and Coity 1 and 2 (Richmond 2009). Two small cremation deposits, found in pits near Llanystumdwy, Gwynedd, returned

Middle Bronze Age dates (Kenney *et al* 2013). 11 (22.0%) cremation deposits were found in small pits or scoops at Pennant Melangell Church (Britnell 1994).

Nine (75.0%) burial mounds (five of which were fully excavated) contained a single cremation deposit. Three (25.0%) mounds (of which only one site – Aber Camddwr II – was fully excavated) were associated with multiple deposits, four at Aber Camddwr II (Marshall and Murphy 1991) and Cornell Pen y Bedd (Davies 1949: 439-441), and six at Kilpaison Burrows (Fox 1926a). Six (40.0%) deposits belonged to the primary phase of the monument and nine (60.0%) represented secondary deposits inserted either into the mound (e.g. Kilpaison Burrows: Fox 1926a) or in features outside the mound (e.g. Welsh St Donats 3 burial 6: Ehrenberg *et al* 1981: 820). The difference between the number of primary and secondary deposits is not significant ($\chi^2_{(1)} = 0.6$, $p = 0.439$). There is also no significant association between the phase (primary and secondary) and position (central and non-central) of deposits ($p = 1.0$; Fisher's Exact Test) (Table 5.23).

Table 5.23: Frequencies of Middle Bronze Age cremation deposits in terms of phase and position (N=15 cremation deposits).

		Central		*Non-central*	
Phase	*Total*	*No.*	*%*	*No.*	*%*
Primary	6	3	50.0	3	50.0
Secondary	9	5	55.6	4	44.4
Total	15	8	53.3	7	45.7

5.8.2 Burial features

The majority (n=22, 44.0%) of Middle Bronze Age cremation deposits came from pits which varied between 0.2-0.7m in diameter. Only one pit (Tir Mostyn B: Lynch 1984a: 98) was covered by a stone slab. Three deposits associated with standing stones (Aber Camddwr pit 1 and pit 4: Marshall and Murphy 1991: 58, 60, Bridgend: Lewis 1966: 251) were found at the base or in the fill of the stonehole. The 11 cremation deposits from Pennant Melangell Church came from shallow pits or scoops cut into the subsoil between 0.2-1.1m in diameter (Britnell 1994: 53, 68). Three (5.0%) deposits came from short-cists, which varied in size between 0.3 x 0.4m (cist B) and 0.4 x 0.5m (cist A) at

Penmaenmawr 280 (Griffiths unpublished) and 0.7 x 0.9m at Six Wells 271' (Fox 1959: 164). Three (5.0%) deposits were found on the ground surface, as for example under the kerb cairn at Brenig 6 (Allen 1993: 96), or near the standing stone at Rhos y Clegyrn (Lewis 1974: 21).

Several of the pits from Pennant Melangell Church showed evidence for *in situ* burning and contained dense concentrations of charcoal (Britnell 1994: 54). Evidence for *in situ* burning was also identified inside and on the ground surface around pit 16 at Aber Camddwr II (Marshall and Murphy 1991: 58). Both features could possibly represent the remains of cremation pyres.

5.8.3 Deposit types

Of the total sample of Middle Bronze Age cremation deposits, 29 (58.0%) deposits represented cremation burials, 15 (51.7%) of which had been placed inside pottery vessels. Eight (15.0%) deposits represented token deposits of crematd bones, most of which were found in features associated with standing stones (Aber Camddwr II: Marshall and Murphy 1991: 58, 60, Bridgend: Lewis 1966: 252, Longstone Field: Williams 1989: 37, Plas Gogerddan: Murphy 1992: 7, Rhos y Clegyrn: Lewis 1974: 21). Thirteen (25.0%) deposits – which include the 11 deposits from Pennant Melangell Church (McKinley 1994b: 102) and two deposits from Aber Camddwr II (pit 16 and burnt layer: Marshall and Murphy 1991: 58) – probably represent the remains of pyre debris.

5.8.4 Demography

Demographic data was available for 35 (70.0%) Middle Bronze Age cremation deposits, of which 14 (40.0%) have been examined as part of this analysis (ID No. 224-237 in Appendix F).

Of the sample of Middle Bronze Age deposits with demographic data, 32 (91.4%) deposits contained one individual and three (8.6%) two individuals. Of these, 35 of the 37 individuals identified could be placed within broad age categories, which include 12 (34.3%) non-adults and 23 (65.7%) adults (Table 5.24, Figure 5.17). Five (21.7%) adults were sexed, two (40.0%) males and three (60.0%) females (Table 5.24, Figure 5.17), with a sex ratio of 1:1.5 in favour of females. The majority (n=32, 91.4%) of Middle Bronze Age cremation deposits contained one non-adult or one adult. Deposits with multiple individuals (n=3, 8.6%) each contained one non-adult and one adult.

Table 5.24: Middle Bronze Age cremation deposits by age and sex (N=37 individuals; M = male, F = female, ? = unsexed).

Age	*M*	*?M*	*??M*	*F*	*?F*	*??F*	*?*	*Total*
Foetus/neonate	-	-	-	-	-	-	-	-
Infant	-	-	-	-	-	-	1	1
Infant/young child	-	-	-	-	-	-	1	1
Young child	-	-	-	-	-	-	4	4
Young/older child	-	-	-	-	-	-	1	1
Older child	-	-	-	-	-	-	4	4
Adolescent	-	-	-	-	-	-	1	1
Total non-adult	-	-	-	-	-	-	12	12
Young adult	-	-	-	-	-	-	1	1
Middle adult	-	-	-	-	-	1	-	1
Middle/older adult	-	-	-	-	-	-	2	2
Older adult	-	2	-	-	-	-	1	3
Adult	-	-	-	1	1	-	14	16
Total adult	-	2	-	1	1	1	18	23
Indeterminate	-	-	-	-	-	-	2	2
Total	-	2	-	1	1	1	32	37

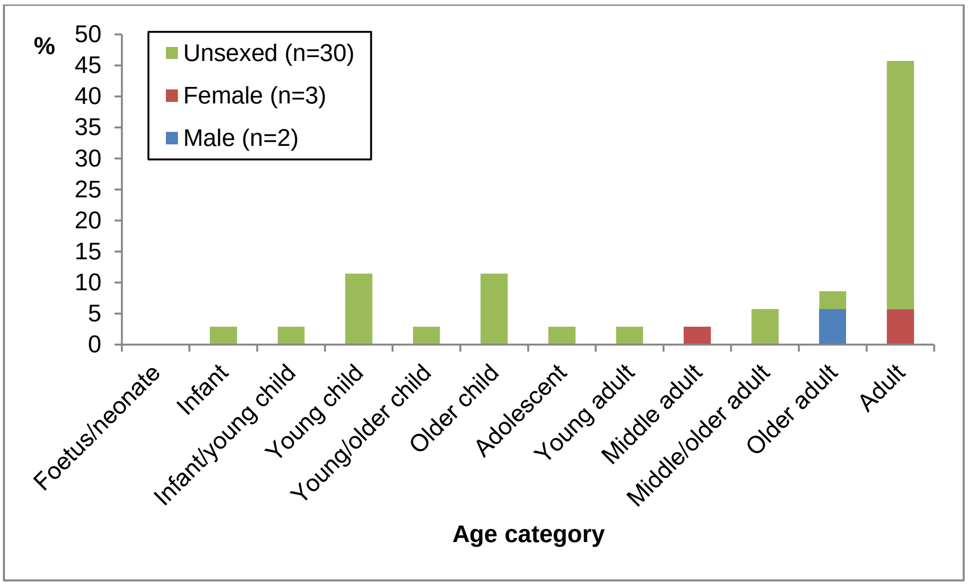

Figure 5.17: Demographic data for Middle Bronze Age cremation deposits (N=35 individuals).

5.8.5 Grave goods

Around a third (n=17, 34.0%) of Middle Bronze Age cremation deposits were associated with artefacts; 16 (32.0%) deposits were associated with one artefact, and one (2.0%) with two artefacts (the double-urn burial with two Collared Urns from Kilpaison Burrows (deposit CII)). Fifteen (30.0%) deposits were associated with pottery vessels and two (4.0%) with flint flakes (Table 5.25). Two-thirds (n=10, 65.7%) of pottery vessels were inverted. There were no significant associations between age (non-adult and adult) and type of pottery vessels (Barrel Urns, Bucket Urns, Collared Urns and Trevisker Ware) (p = 0.622; Fisher's Exact Test).

Table 5.25: Types of artefacts associated with Middle Bronze Age cremation deposits (N=50 cremation deposits).

Material	*Artefact type*	*No. of deposits*	*% of MBA cremation deposits*
Flint	Flake	2	4.0
Pottery	Barrel Urn	2	4.0
	Bucket Urn	3	5.0
	Collared Urn	8	15.0
	Trevisker Ware	1	2.0
	Unknown	1	2.0
	Total	15	30.0
Total		17	34.0

5.9 Comparative analysis: changes in funerary and ritual practices across time

5.9.1 Monument types

The analysis of changes in monument types across time is problematic as the sample of excavated monuments only represents a small sample of funerary and ritual monuments recorded in Wales (section 5.3.2). Despite this issue, several differences can be identified in the types of monuments between periods (Figure 5.18). The majority of bone deposits in the Middle Neolithic period were not associated with upstanding monuments. One exception is the pit burial (A252) at the Llandygai A henge, although it is possible that the construction of the henge may post-date the deposition of the burial deposit (section 3.1.4). Two Middle Neolithic cremation deposits were associated with circular enclosures, the stone arc at Bryn Celli Ddu (Burrow 2010a, Hemp 1930) and the timber circle at Meusydd I (Jones 2009). Only three Late Neolithic monuments contained human bone deposits, which include two passage graves, Barclodiad-y-Gawres (Powell and Daniel 1956) and Bryn Celli Ddu (Burrow 2010a, Hemp 1930), and the penannular ring ditch at Sarn-y-bryn-caled 2 (Gibson 1994).

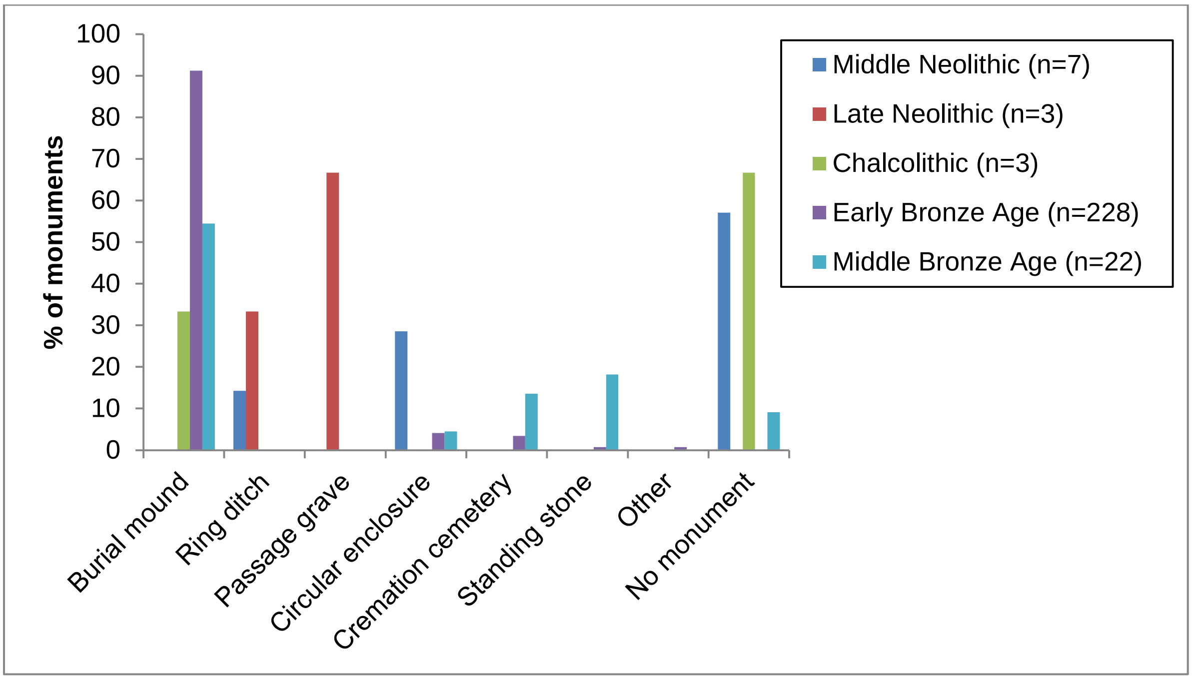

Figure 5.18: Proportions of monument types with burial deposits per period.

Burial traditions which involved the construction of burial mounds (round barrows and burial cairns) did not start until the Chalcolithic period in Wales, although these remained relatively rare and their distribution was restricted to south-east Wales. Burial mounds became the dominant form of funerary monument in the Early Bronze Age period. This period also saw the development of a new form of funerary monument, the cremation cemetery. Burial deposits were also placed within circular enclosures (henges, timber circles and stone circles), although this practice was less common than in the Middle and Late Neolithic periods (Figure 5.18). The construction of burial mounds, circular enclosures and cremation cemeteries carried on into the Middle Bronze Age period, although there is a significant decrease in the number of funerary and ritual monuments built after the 18th century BC (228 monuments for the Early Bronze Age versus 22 for the Middle Bronze Age: Figure 5.2). However, it is probable that this difference is over-emphasized by the fact that several undated monuments were classified into the Early Bronze Age period in this analysis. In the Middle Bronze Age a greater proportion of human bone deposits were associated with cremation cemeteries, standing stones or no monumental structures than in the Early Bronze Age period (Figure 5.18).

Differences in the size of round barrows and burial cairns can also be identified between different types of mounds. For the Early Bronze Age period, burial cairns are on average smaller (mean diameter of 15.2m) than round barrows (mean diameter of 19.1m) (Figure 5.19). There is a notable decrease in the size of burial cairns in the Middle Bronze Age (average diameter of 4.9m), whilst round barrows remained large (average diameter of 22.4m) (Figure 5.20).

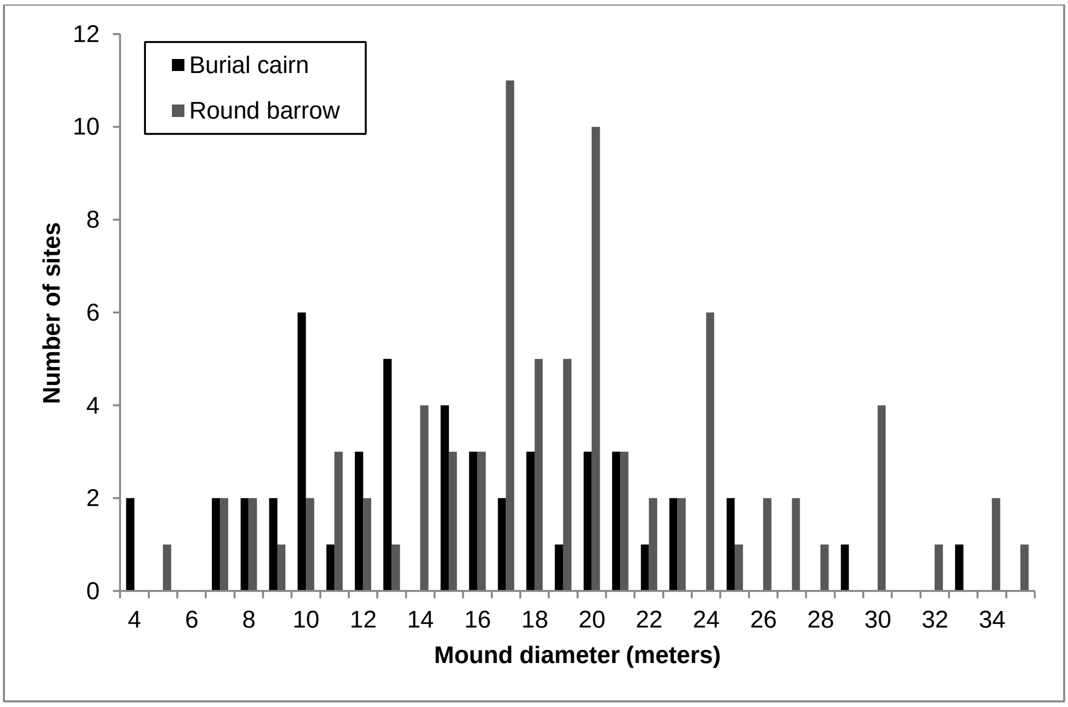

Figure 5.19: Diameters of Early Bronze Age mounds, rounded to the nearest meter (N=131 mounds, including 49 burial cairns and 82 round barrows).

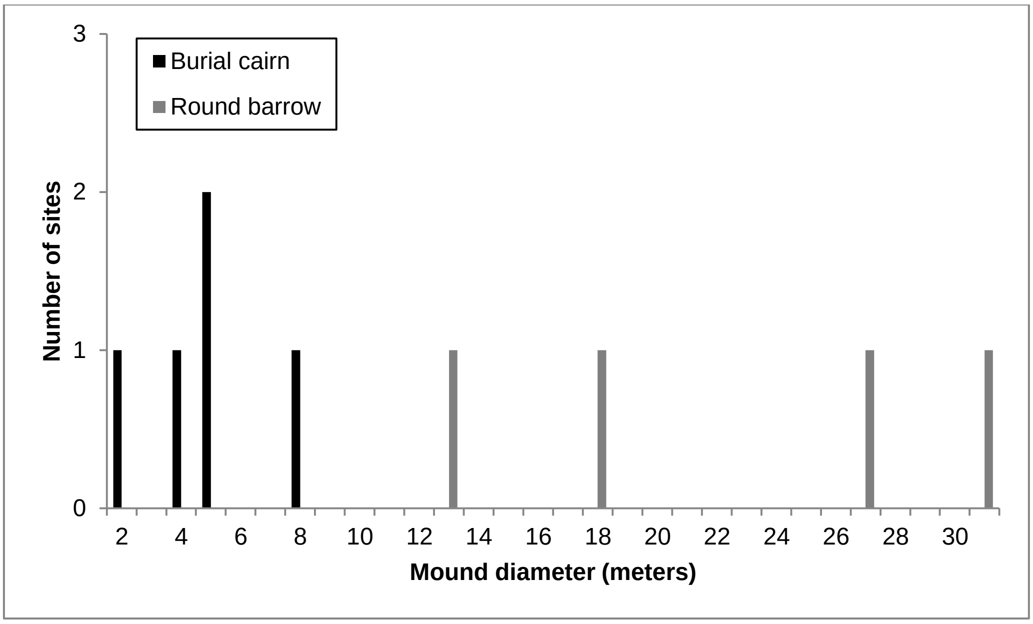

Figure 5.20: Diameters of Middle Bronze Age mounds, rounded to the nearest meter (N=9 mounds, including 5 burial cairns and 4 round barrows).

The majority of Middle Neolithic monuments contained a single bone deposit (Figure 5.21), although sites with multiple deposits also existed, as for example the triple inhumation burial at Four Crosses 5 (Warrilow *et al* 1986) and the inhumation and cremation burials at Trelystan II (burial 1) (Britnell 1982). Late Neolithic monuments contained multiple deposits, placed in small pits in the penannular ditch at Sarn-y-bryn-caled 2 (Gibson 1994), or on the floor of the passage graves at Barclodiad-y-Gawres (Powell and Daniel 1956) and Bryn Celli Ddu (Burrow 2010a, Hemp 1930). The tradition of single burials re-emerged in the Chalcolithic period, although the sample is too small to assess if this represents a genuine pattern within the burial data. A major change in burial traditions occurred at the start of the Early Bronze Age, as the majority (69.0%) of monuments contained multiple burial deposits. The Middle Bronze Age saw a reversal of this trend, as the majority of monuments contained a single burial deposit (Figure 5.21).

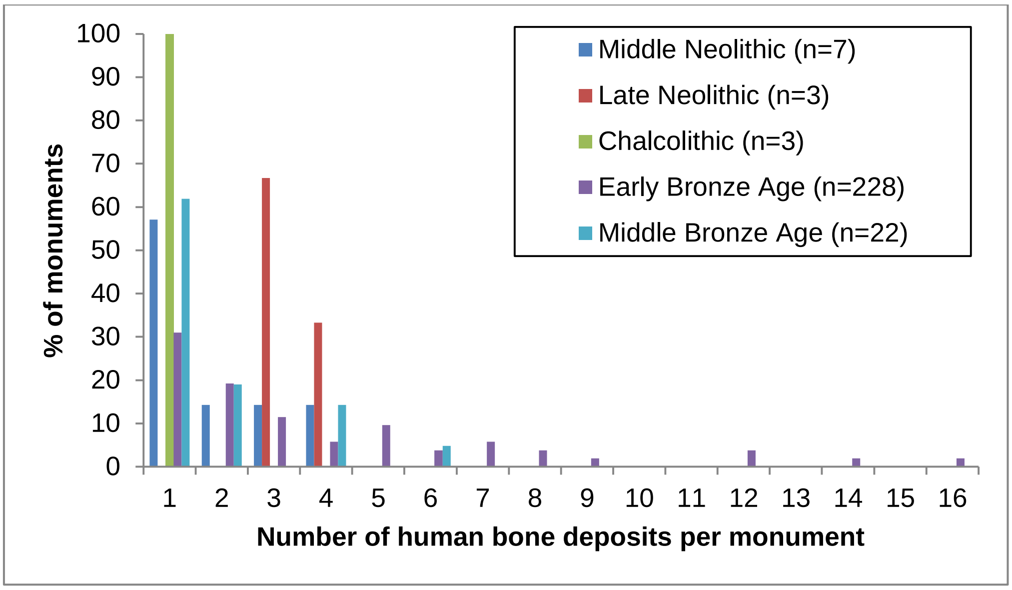

Figure 5.21: Proportions of excavated monuments with each number of bone deposits per period.

Whilst no direct correlation can be identified between the size of the mounds and number of associated burials (Figure 5.22), larger mounds (>10m in diameter) contain on average more burials (mean = 4.2 burials) than smaller (≤10m diameter) mounds (mean = 1.4 burials). Furthermore, multi-phased mounds tend to contain a larger number of burials than single-phased mounds (Figure 5.23).

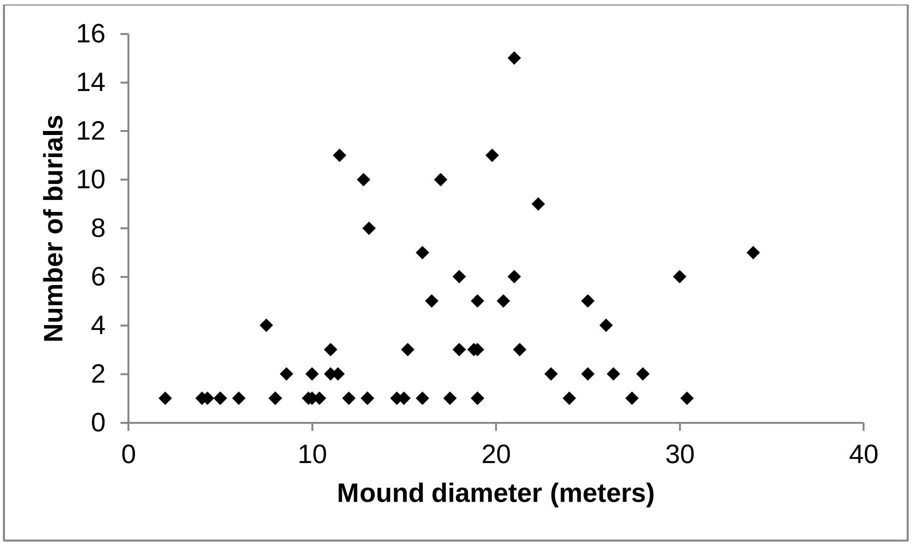

Figure 5.22: Relationship between the size of burial mounds (diameter) and number of associated burials (N=55 burial mounds).

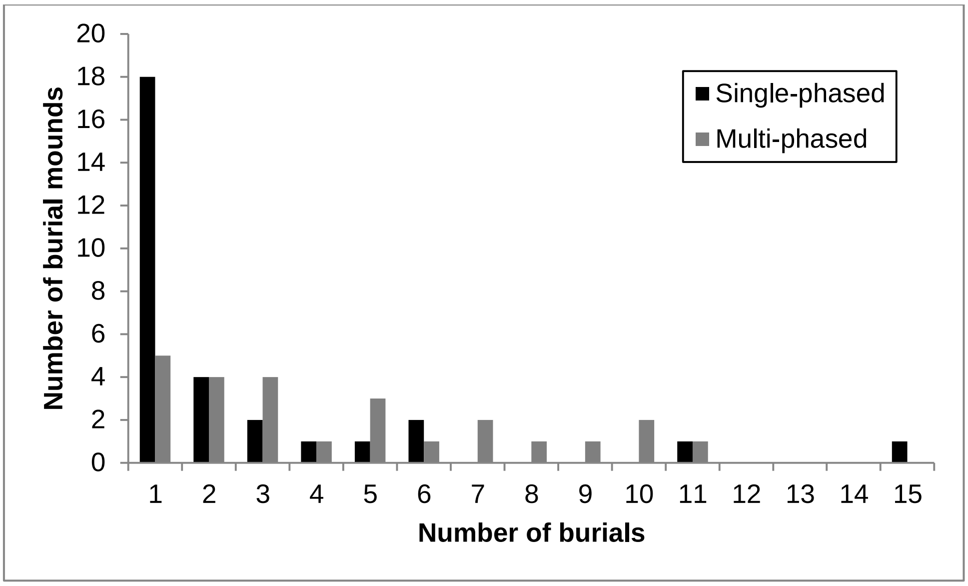

Figure 5.23: Number of burials from single- and multi-phased round barrows (N=55 burial mounds).

5.9.2 Burial features

The dominant type of burial feature from the Middle Neolithic to the Middle Bronze Age is the burial pit (Figure 5.24). Short-cists were predominantly found associated with Early Bronze Age inhumation burials: 48.7% of Early Bronze Age inhumations were in short-cists (section 5.7.2.1) compared to 14.3% of Early Bronze Age cremation deposits (section 5.7.2.2) and 5.0% of Middle Bronze Age cremation deposits (section 5.8.2). The largest burial features were recorded in the Middle Neolithic, Chalcolithic and Early Bronze Age periods (Figure 5.25). This is probably simply a reflection of burial deposit types, as the largest burial features in these periods were associated with inhumation burials (sections 5.4.2, 5.6.2, 5.7.2).

The majority (n=309, 88.8%) of burial pits from all periods represented simple structures without associated features. The earliest wooden feature is the possible wooden coffin for the Middle Neolithic inhumation burial at Trelystan II (Britnell 1982: 116). Wooden coffins and tree trunk coffins have also been recorded in the Early Bronze Age period, 77.8% (n=7) of which were associated with inhumations and 22.2% (n=2) with cremation burials. Other types of wooden features in the Early Bronze Age period include rectangular mortuary structures found within or outside the pits (n=4), planks placed at the base or sides of the pits (n=5), and timber posts (n=3). The earliest example of stone structures inside a burial pit is from the Chalcolithic Beaker burial at Sutton 268' where the inhumation burial was surrounded by a sub-rectangular setting of stone blocks. Similar stone settings were also found associated with six Early Bronze Age inhumations, as for example at Aber Camddwr II (Hogg 1977: 26), Cefn-Goleu (Bevan-Evans and Hayes 1955: 94), Welsh St Donats 3 burials B and C (Ehrenberg *et al* 1981: 814). 38 (15.1%) burial pits with cremation deposits contained flat stones placed at the top or on the sides of the pits in the Early Bronze Age period.

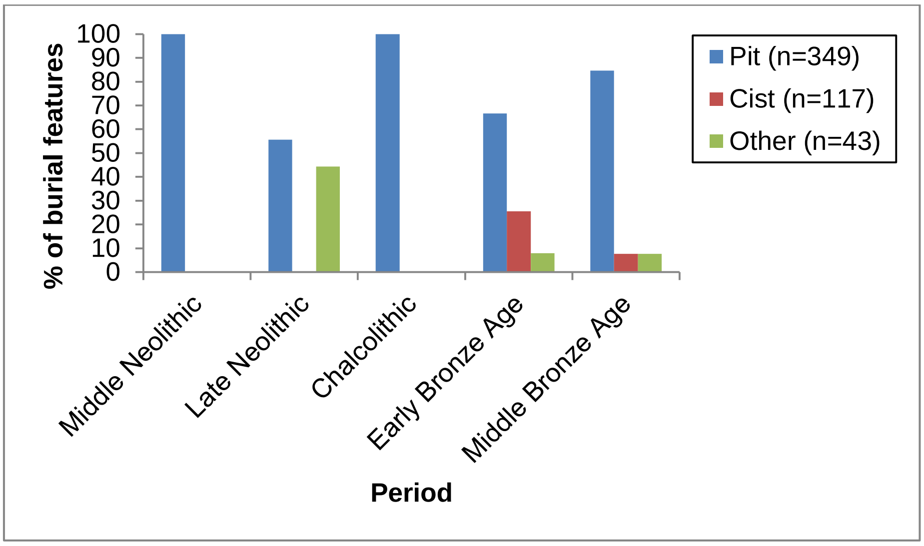

Figure 5.24: Proportions of burial features per period.

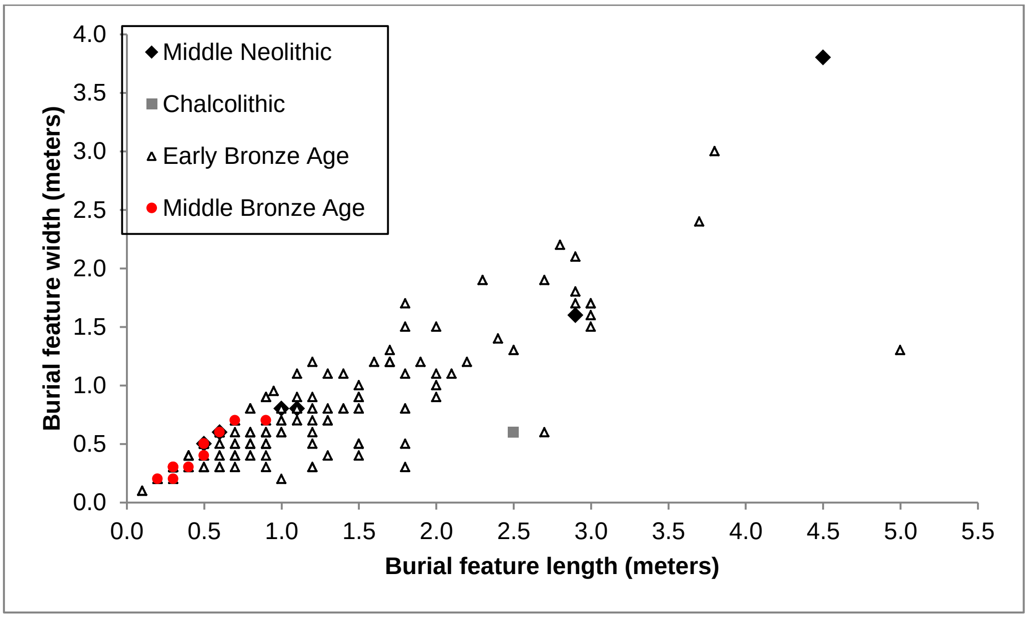

Figure 5.25: Size of burial features per period.

The number of Middle Neolithic burials is too small to examine patterns in the alignment of burial features (Table 5.26). The most common orientation for inhumation burials from the Chalcolithic and Early Bronze Age periods is N-S (Table 5.26). NW-SE and NE-SW are the second and third most common types of alignments for Early Bronze Age inhumations. The orientation of burial features with cremation deposits in the Early Bronze Age period is more variable, but the most common orientations are NE-SW, NW-SE and N-S (Table 5.26). The analysis of cremation pit orientation for the Middle Bronze Age period is not possible as all burial pits were circular or roughly circular (Appendix F).

Table 5.26: Orientation of burial features per period (MN = Middle Neolithic, C = Chalcolithic).

Orientation	*MN*		*C*		*Early Bronze Age*					
					Inhumations		*Cremation*		*Total*	
	N	%	N	%	N	%	N	%	N	%
N-S	-	-	1	100	32	48.5	6	22.2	38	40.9
NNE-SSW	1	50.0	-	-	4	5.1	1	3.7	5	5.4
NNW-SSE	-	-	-	-	3	4.5	1	3.7	4	4.3
NE-SW	1	50.0	-	-	9	13.6	8	29.6	17	18.3
ENE-WSW	-	-	-	-	3	4.5	1	3.7	4	4.3
NW-SE	-	-	-	-	9	13.6	6	22.2	15	15.1
WNW-ESE	-	-	-	-	1	1.5	1	3.7	2	2.2
E-W	-	-	-	-	5	7.6	3	11.1	8	8.6
Total	2	100	1	100	66	100	27	100	93	100

5.9.3 Deposit types

Deposit types for the Middle and Late Neolithic periods include both inhumations and cremation deposits, although for both periods cremation deposits were more common than inhumations (Figure 5.26). The majority (n=3, 75.0%) of Middle Neolithic inhumations were in a crouched position (Figure 5.27). The only inhumation burial in the Late Neolithic period came from the floor of the passage at the Bryn Celli Ddu passage grave. Burials were the most frequent type of cremation deposits across time, except for the Late Neolithic period when token deposits of cremated bones were more common (Figure 5.28).

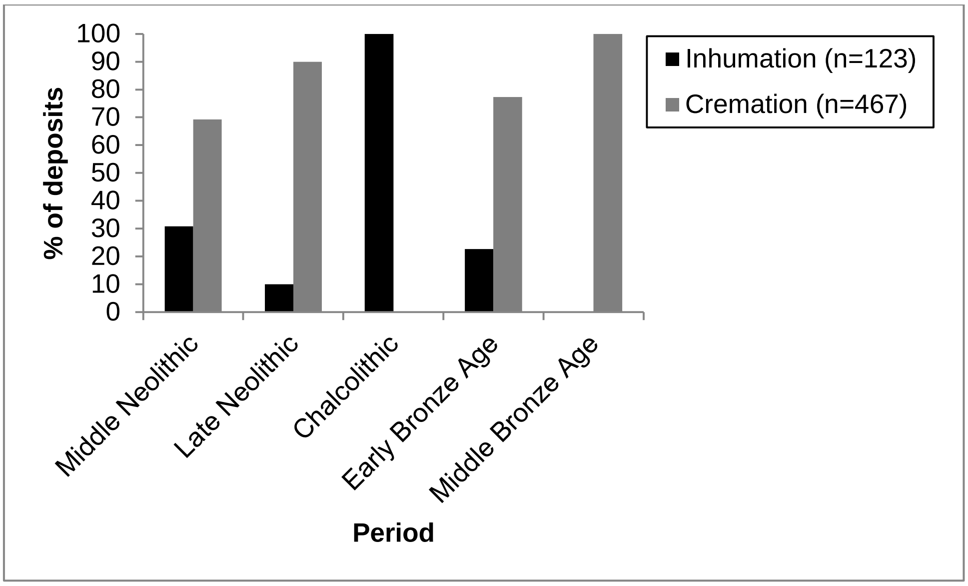

Figure 5.26: Proportions of deposit types per period.

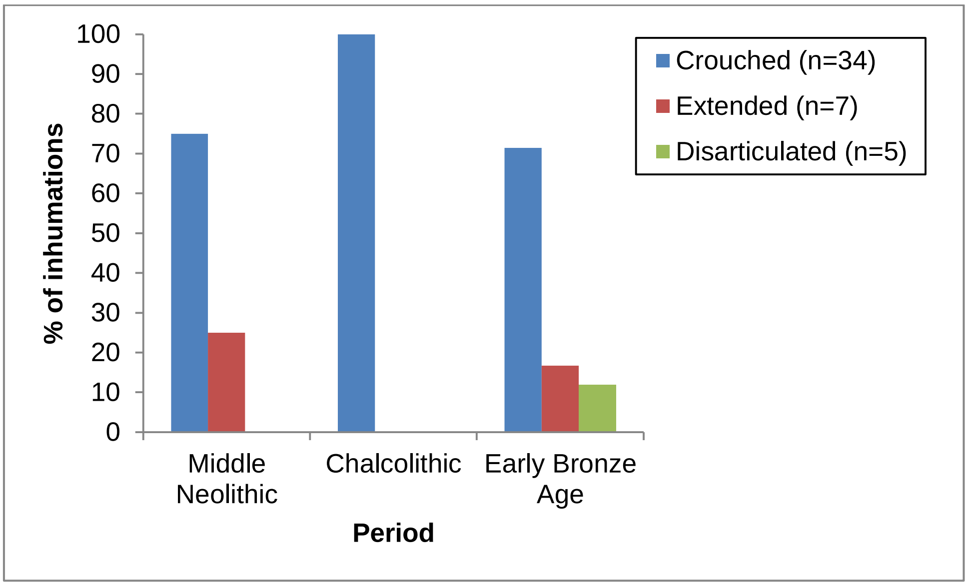

Figure 5.27: Proportions of inhumation types per period.

A shift in deposit types occurred in the Chalcolithic period towards inhumations, although the small sample of burial deposits from this period makes it difficult to assess if this represents a genuine trend in the burial data. The only well-preserved inhumation from this period (Sutton 268') was in a crouched position. The tradition of inhumation burials carried on into the Early Bronze Age period, although cremation deposits became the dominant form of funerary deposits (Figure 5.26). The majority (n=30, 73.2%) of Early Bronze Age inhumations were in a crouched position, which were equally positioned on their right or left side (Table 5.27). Other less common types of Early Bronze Age deposits include extended and disarticulated inhumations (Figure 5.27). The head was most commonly placed on the north or south side of the burial feature, with the body facing east or west (Table 5.27).

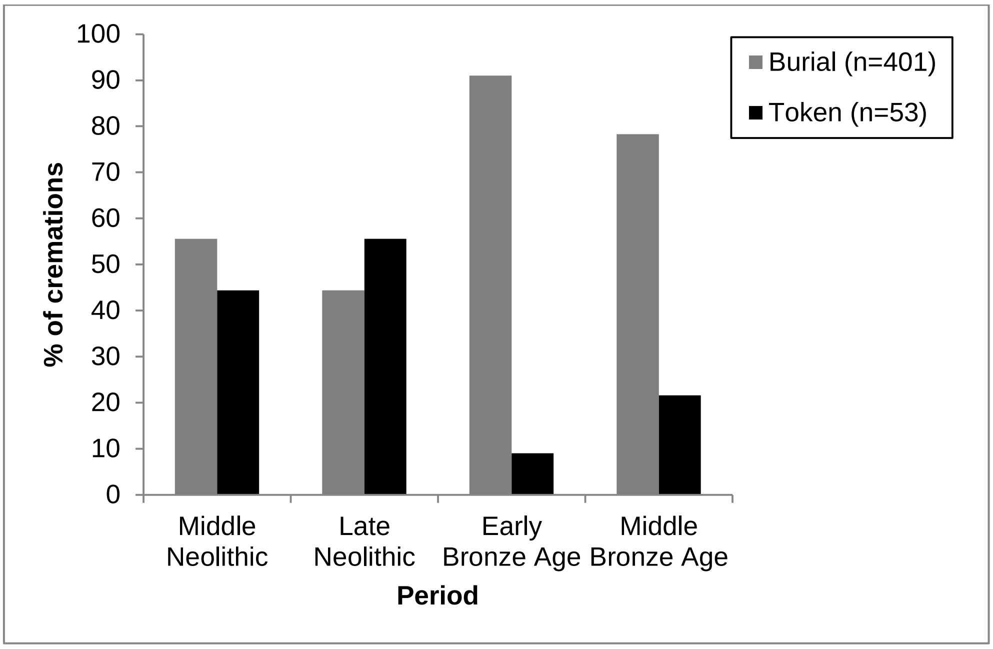

Figure 5.28: Proportions of cremation deposit types per period.

Table 5.27: Position and orientation of Chalcolithic and Early Bronze Age inhumation burials.

		Chalcolithic		*Early Bronze Age*	
		N	*%*	*N*	*%*
Head position	North	-	-	17	60.7
	South	1	100	6	21.4
	North-West	-	-	2	7.1
	East	-	-	1	3.6
	West	-	-	2	7.1
Body position	Right side	-	-	11	50.0
	Left side	1	100	11	50.0
Body facing	East	-	-	11	52.4
	West	1	100	8	38.1
	North-East	-	-	1	4.8
	South-West	-	-	1	4.8

The majority of Early Bronze Age (n=399, 77.3%) and Middle Bronze Age (n=50, 100%) deposits were cremation deposits (Figure 5.25), most of which represented burials (Figure 5.28). Token cremation deposits have been recorded in funerary and ritual monuments across all chronological periods except the Chalcolithic (Figure 5.28). A significantly greater proportion of cremation deposits represented token deposits in the Middle Bronze Age (n=8, 21.6%) than in the Early Bronze Age (n=36, 9.0%) ($\chi^2_{(1)} = 5.924$, $p = 0.014$).

5.9.4 Number of individuals represented in burial deposits

The majority (80.0%) of Middle Neolithic burials contained one individual, except for the triple inhumation burial at Four Crosses 5 (Warrilow *et al* 1986) and the cremation burial from Bryn Gwyn with four individuals (ID No. 1 in Appendix F) (Figure 5.29).

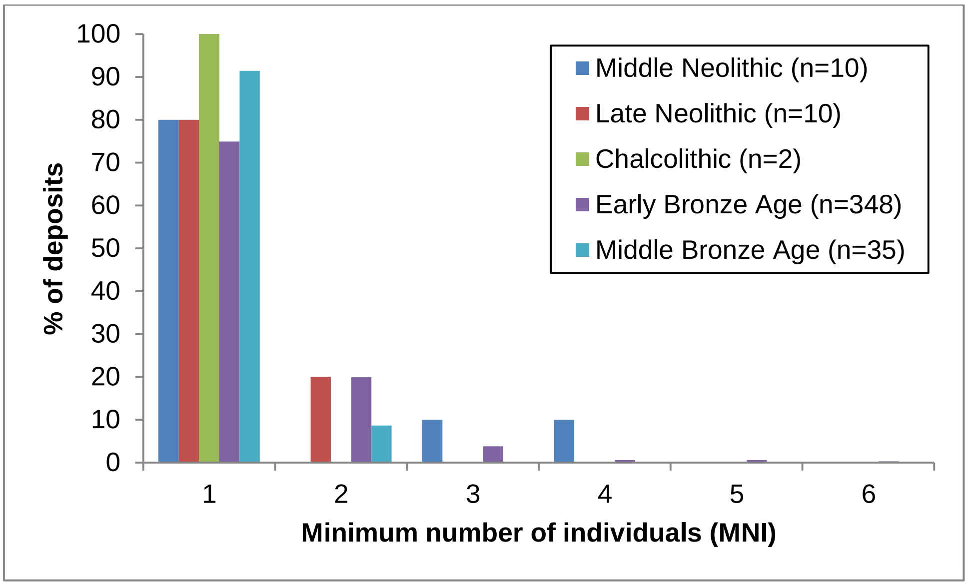

Figure 5.29: Proportions of deposits with each minimum number of individuals (MNI) per period.

Most (n=8, 80.0%) Late Neolithic deposits also contained one individual, except for the deposits from the floor, passage and chamber(s) of the two passage graves, Barclodiad-y-Gawres (Powell and Daniel 1956) and Bryn Celli Ddu (Burrow 2010a, Hemp 1930). ‘Pre-fission’ Beaker inhumation burials from the Chalcolithic period contained a single individual (section 5.6.4). Around three-quarters (n=260, 74.2%) of deposits with preserved bones from the Early Bronze Age period also contained one individual. A greater proportion of deposits contained multiple individuals in the Early Bronze Age compared to the other periods (Figure 5.29), although this difference is not statistically significant ($p = 0.197$; Fisher’s Exact Test). However, a significantly greater proportion of cremation deposits contained multiple individuals than inhumation burials ($\chi^2_{(1)}$ = 5.635, p = 0.01) in this period. Middle Bronze Age cremation deposits most frequently contained one individual (section 5.8.4) (Figure 5.29).

There is no significant difference in the number of non-adults and adults represented in funerary and ritual deposits between chronological periods (p = 0.284; Fisher's Exact Test) (Figure 5.30). There is also no significant difference in the number of males and females in burial deposits between periods (p = 0.7; Fisher's Exact Test) (Figure 5.31).

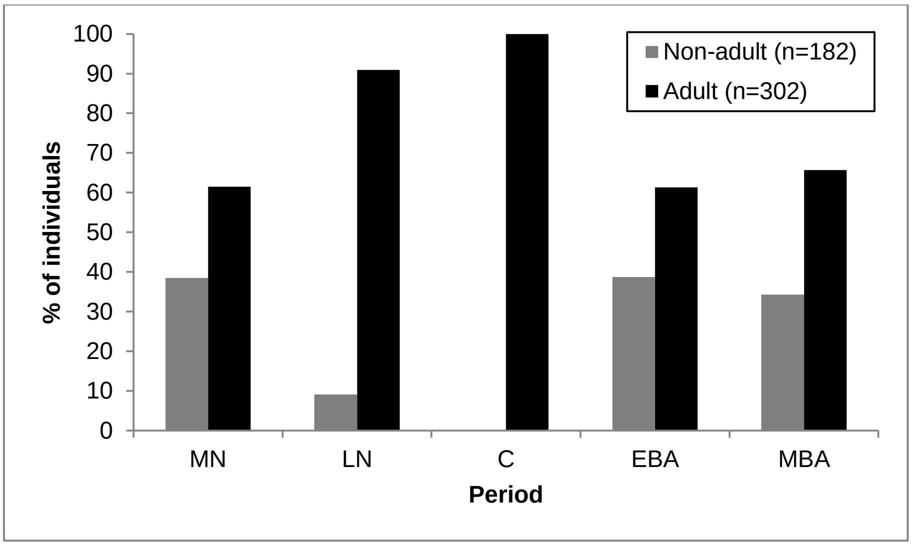

Figure 5.30: Proportions of non-adults and adults per period (MN = Middle Neolithic, LN = Late Neolithic, C = Chalcolithic, EBA = Early Bronze Age, MBA = Middle Bronze Age).

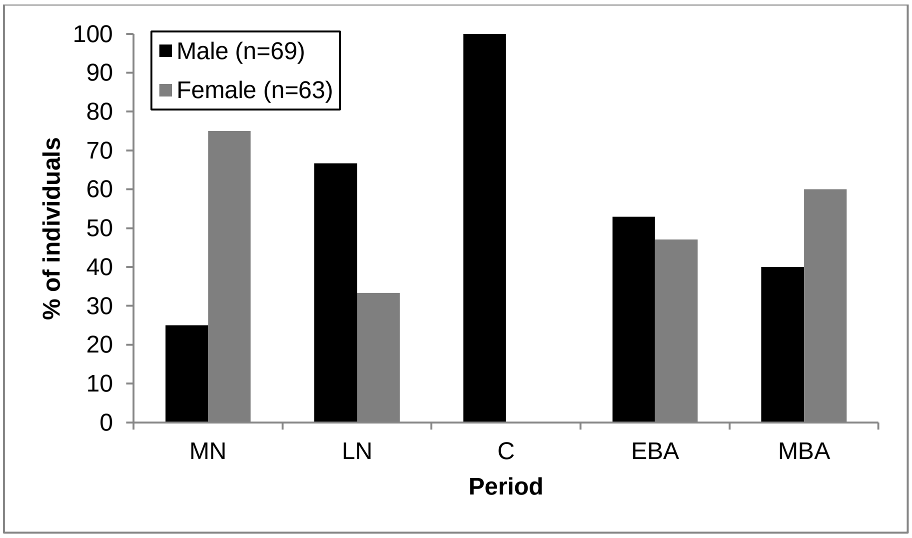

Figure 5.31: Proportions males and females per period (MN = Middle Neolithic, LN = Late Neolithic, C = Chalcolithic, EBA = Early Bronze Age, MBA = Middle Bronze Age).

5.9.5 Grave goods

Human bone deposits from the Middle Neolithic, Chalcolithic and Early Bronze Age periods more frequently contained associated artefacts than deposits from the Late Neolithic and Middle Bronze Age periods (Figure 5.31). The majority of Early Bronze Age and Middle Bronze Age deposits contained one associated artefact, whilst most deposits from the Middle Neolithic and Chalcolithic periods contained multiple artefacts (between two to eight in the Middle Neolithic and two to nine in the Chalcolithic) (Figure 5.33, Table 5.28). Bone deposits accompanied by the highest number of artefacts are from the Middle Neolithic (although this is only represented by the Lower Luggy deposit), Chalcolithic (also only represented by one deposit, Sutton 268') and Early Bronze Age periods (Figure 5.33, Table 5.28).

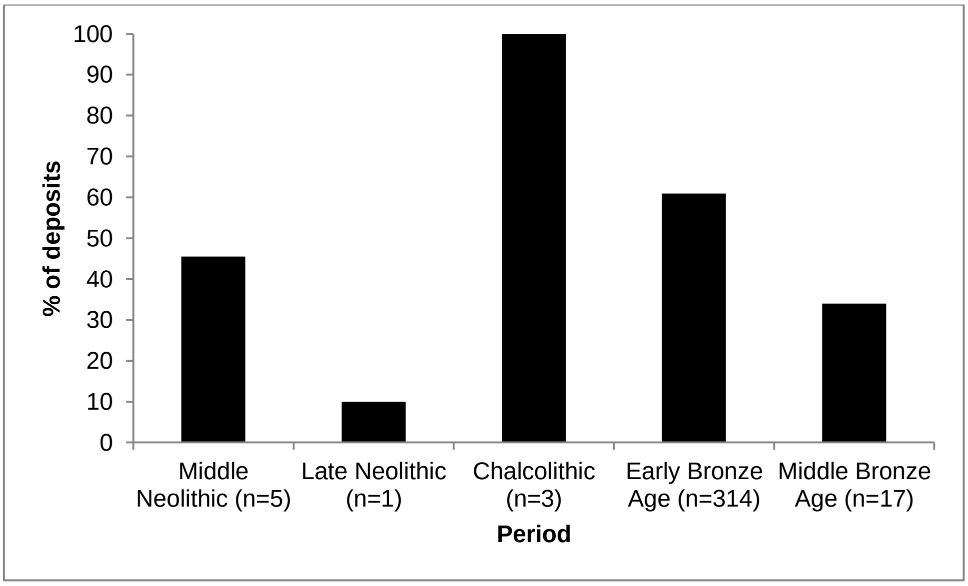

Figure 5.32: Proportions of deposits with associated artefacts per period.

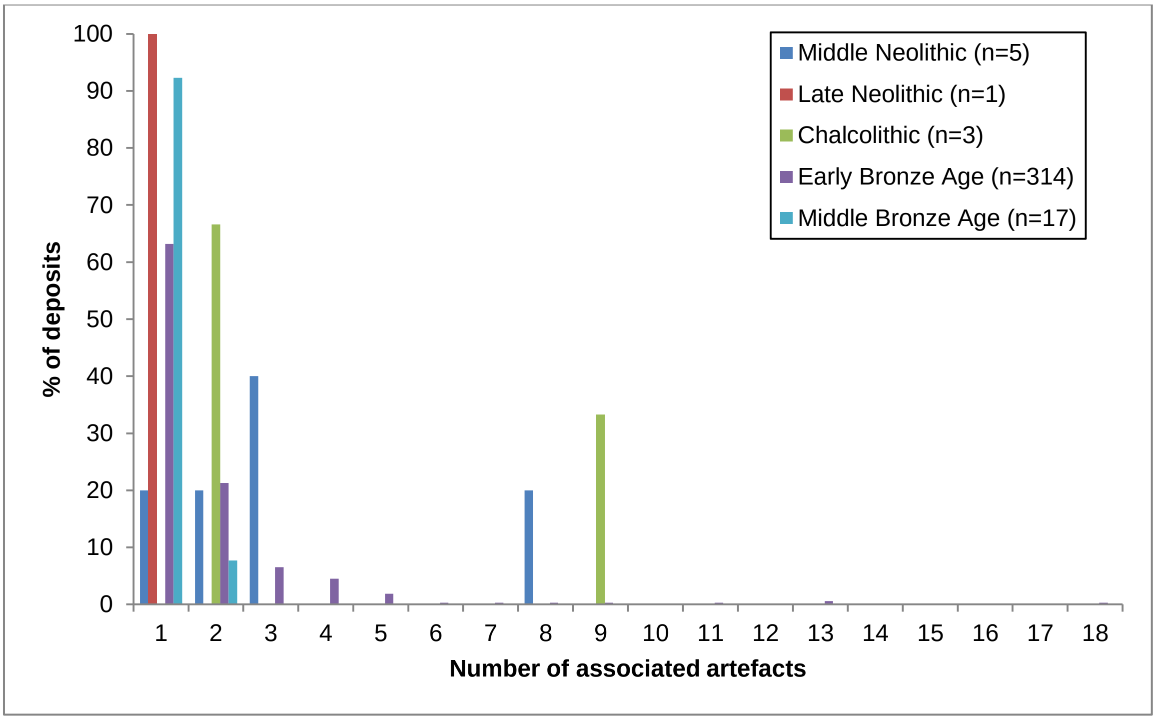

Figure 5.33: Proportions of bone deposits with each number of associated artefacts per period.

Table 5.28: Number of deposits with each number of associated artefacts per period (MN = Middle Neolithic, LN = Late Neolithic, C = Chalcolithic, EBA = Early Bronze Age, MBA = Middle Bronze Age).

Number of artefacts	*Number of deposits*				
	MN	*LN*	*C*	*EBA*	*MBA*
1	1	1	-	196	16
2	1	-	2	66	1
3	2	-	-	20	-
4	-	-	-	14	-
5	-	-	-	6	-
6	-	-	-	1	-
7	-	-	-	1	-
8	1	-	-	1	-
9	-	-	1	1	-
10	-	-	-	-	-
11	-	-	-	1	-
12	-	-	-	-	-
13	-	-	-	2	-
14	-	-	-	-	-
15	-	-	-	-	-
16	-	-	-	-	-
17	-	-	-	-	-
18	-	-	-	1	-

The types of artefacts associated with burial deposits in the Middle Neolithic period include pottery vessels (Ebbsfleet Bowl from Four Crosses 5: Warrilow *et al* 1986: 64) as well as flint (flint knife and flakes from Trelystan II: Britnell 1982: 136) and stone objects (pear-shaped stone from Four Crosses 5: Warrilow *et al* 1986: 64 and axe-polisher from Llandygai A: Lynch and Musson 2001: 45) (Table 5.29). By contrast the only object found associated with a Late Neolithic bone deposit is a burnt flint flake (from Sarn-y-bryn-caled 2 cremation 1: Gibson 1994: 159). Bone deposits from the Chalcolithic period were associated with a greater variety of artefact types, which include flint, pottery, stone and worked bone objects (Table 5.29). The greatest diversity of artefact types associated with bone deposits is found in the Early Bronze Age period, when a number of new material types (amber, copper/bronze and gold) and artefact types (awls, beads, daggers, etc.) were used (Table 5.29). This contrasts with the types of artefacts associated with bone deposits in the Middle Bronze Age period which were limited to pottery vessels and flint flakes (Table 5.29).

Table 5.29: Grave good associations per period (MN = Middle Neolithic, LN = Late Neolithic, C = Chalcolithic, EBA = Early Bronze Age, MBA = Middle Bronze Age).

Material	*Artefact type*	*MN*	*LN*	*C*	*EBA*	*MBA*
Bone	Bead				X	
	Pendant				X	
	Pin			X	X	
	Point				X	
Amber	Bead				X	
Gold	Bead				X	
	Cape				X	
	Ring				X	
Jet and lignite	Bead				X	
	Button				X	
	Necklace				X	
	Ring				X	

Table 5.29 (cont'd): Grave good associations per period (MN = Middle Neolithic, LN = Late Neolithic, C = Chalcolithic, EBA = Early Bronze Age, MBA = Middle Bronze Age, B&T = barbed-and-tanged).

Material	*Artefact type*	*MN*	*LN*	*C*	*EBA*	*MBA*
Flint	Arrowhead (B&T)			X	X	
	Arrowhead (leaf)				X	
	Blade				X	
	Core				X	
	Fabricator				X	
	Flake	X	X		X	X
	Knife	X			X	
	Point				X	
	Scraper			X	X	
Stone	Arrowshaft straighteners				X	
	Axe-polisher	X				
	Bead				X	
	Cup				X	
	Hammerstone				X	
	Hone				X	
	Flake				X	
	Knife				X	
	Pendant				X	
	Spindlewhorl			X		
	'sponge-fingers'				X	
	Stopper				X	
	Stud				X	
	Worked stone	X			X	
	Wristguard			X		
Bronze	Armlet				X	
	Awl				X	
	Axe				X	
	Blade				X	
	Bracelet				X	
	Chisel				X	
	Dagger				X	
	Knife				X	
	Pin				X	
	Point				X	
	Razor				X	

Table 5.29 (cont'd): Grave good associations per period (MN = Middle Neolithic, LN = Late Neolithic, C = Chalcolithic, EBA = Early Bronze Age, MBA = Middle Bronze Age).

Material	*Artefact type*	*MN*	*LN*	*C*	*EBA*	*MBA*
Bronze	Rivet				X	
	Spearhead				X	
	Tweezers				X	
Pottery	Barrel Urn					X
	Beaker			X	X	
	Bucket Urn					X
	Collared Urn				X	X
	Cup				X	
	'ear-studs'				X	
	Ebbsfleet Bowl	X				
	Faience bead				X	
	Food Vessel				X	
	Trevisker Ware					X

Chapter 6: Analysis of pyre technology and cremation ritual data

This chapter is focused on the examination of pyre technology and cremation rituals. The data presented in the following sections was gathered by the author through the osteological analysis of 206 cremation deposits, including four Middle Neolithic (*c.* 3600-2900 BC), four Late Neolithic (*c.* 2900-2400 BC), 184 Early Bronze Age (*c.* 2200-1700 BC) and 14 Middle Bronze Age deposits (*c.* 1700-1200 BC) (Table 5.1).

The first part of the osteological analysis aimed to identify the condition of the human remains when cremated, such as for example whether whole bodies or selected body parts were cremated, and whether the bones were fleshed or dry. This was based on the analysis of skeletal representation levels and types of heat-induced modifications (sections 4.3.3 and 4.3.4). The second part of the analysis aimed to provide estimations of the minimum temperatures reached by the pyres through the analysis of cremated bone colours (section 4.3.3). The third part focused on the weight of cremation deposits in order to examine aspects of ritual practices associated with the collection and deposition of cremated bones within the burial context (section 4.3.1). The final section was focused on the analysis of the fragmentation levels of cremation deposits in order to examine which pre- and post-depositional factors could account for the fragmentation rates recorded (section 4.3.2). The results of these analyses are presented in the following sections for each chronological period with cremation deposits: Middle Neolithic (section 6.1), Late Neolithic (section 6.2), Early Bronze Age (section 6.3) and Middle Bronze Age (6.4). The final section (6.5) is focused on the examination of changes in pyre technology and cremation rituals across time. The primary data for the analysis of pyre technology data is summarised in Appendix G.

6.1 Middle Neolithic (*c.* 3600-2900 BC)

6.1.1 Condition of the remains: skeletal representation and heat-induced fractures

Between 16.7% (Trelystan II burial 1) and 36.2% (Bryn Gwyn) of cremated bone fragments were identified anatomically in Middle Neolithic cremations. The skeletal representation levels recorded in these deposits suggest that all parts of the skeletons – classified under four anatomical categories: skull, axial, upper limbs and lower limbs (section 4.3.4) – were cremated on the pyre (Table 6.1). Skull fragments were generally over-represented (between 6.6-18.3% of cremated bones in each deposit: Table 6.1) in comparison to other anatomical categories, although this is to be expected as these fragments are the most easily identifiable (McKinley 1994c: 6, Wells 1960).

Table 6.1: Skeletal representation levels in Middle Neolithic cremations.

Deposit	*Bone weight in g (%) skull*	*Bone weight in g (%) axial*	*Bone weight in g (%) upper limbs*	*Bone weight in g (%) lower limbs*
Bryn Gwyn	189.9 (18.3)	24.9 (2.4)	86.9 (8.5)	82.8 (8.0)
Llandygai A252	66.2 (6.6)	25.8 (2.5)	53.9 (5.3)	65.0 (6.3)
Lower Luggy	103.6 (9.2)	61.9 (5.5)	121.6 (10.8)	73.1 (6.5)
Trelystan II	86.7 (9.4)	13.9 (1.5)	11.4 (1.2)	41.9 (4.6)

All Middle Neolithic cremations displayed at least one type of heat-induced bone modification consistent with the cremation of fleshed bodies (section 4.3.3). This includes curved transverse fractures in the Bryn Gwyn deposit, and curved transverse fractures, delamination and patina in the Llandygai A252, Lower Luggy and Trelystan II burial 1 deposits. The analysis of skeletal representation and types of heat-induced fractures therefore suggests that Middle Neolithic cremation rites involved the cremation of complete fleshed bodies.

6.1.2 Pyre temperature: bone colours

Experimental analyses have identified a correlation between the minimum temperature reached in the cremation process and colour of the cremated bones (section 4.3.3). Bone colours in this analysis were assessed based on the grade system established by Wahl (2008: 149-150). Three (75.0%) Middle Neolithic deposits – Bryn Gwyn, Llandygai A252 and Lower Luggy – had reached combustion grade IV (milky/mat white), which suggests that pyre temperatures had reached a minimum of *c.* 650-700°C (Wahl 2008: 150). One (25.0%) deposit (Trelystan II burial 1) had reached combustion grade V (old white), with a minimum pyre temperature of around or above 800°C (Wahl 2008: 150). The bone colours recorded in Middle Neolithic cremations suggest that the minimum temperature reached by the pyres and duration of the cremation processes were sufficient to allow for the complete combustion of soft tissues and calcination of the bones (Mayne Correia 1997, Symes *et al* 2008).

6.1.3 Weight

The weight of Middle Neolithic cremations varied between 1036.7-1305.0g, with a mean of 1142.2g (Table 6.2). These bone weights fall within the expected ranges for a single adult body cremated in modern crematoria (876-5379g: Bass and Jantz 2002, McKinley 1993, Murad 1998, Warren and Maples 1997) and from undisturbed burials from archaeological contexts (57-2200g: McKinley 1997).

Table 6.2: Weight of Middle Neolithic cremations (*bone weight from original bone report by Wilkinson (1982: 192)).

Deposit	*Weight (g)*
Bryn Gwyn	1036.7
Llandygai A252	1079.6
Lower Luggy	1146.6
Trelystan II burial 1	1305.0*

The lowest recorded bone weight came from the Bryn Gwyn pit burial (pit 138), despite the fact it represents the only Middle Neolithic cremation burial with multiple individuals (three non-adults and one adult: section 5.4.4). It is possible that the removal of a wooden post in pit 138 may have led to the unintentional loss of cremated bones (Smith 2012: 27). However, the absence of cremated bones outside and around the burial pit does not suggest that such post-depositional bone loss had occurred. A more probable explanation is that not all cremated bones were collected from the pyre and/or that only a selection of cremated bones from each individual was deposited in the burial pit.

6.1.4 Fragmentation levels

Maximum cremated bone lengths in Middle Neolithic cremations varied between 44mm (Bryn Gwyn) and 80mm (Llandygai A252) (Table 6.3), with a mean of 65mm. The percentages of bones recovered from the 10mm sieve varied from 19.2% (Bryn Gwyn) to 52.7% (Trelystan II burial 1) (Table 6.3), with a mean of 36.8%. The fragmentation levels of Middle Neolithic cremations were higher than the rates recorded from modern British crematoria, where maximum bone lengths varied between 79-195mm (McKinley 1993: 284) and the percentages of bones from the 10mm sieve ranged from 43.1-71.2% (McKinley 1993: 286). Although maximum bone lengths (44-80mm: Table 6.3) are similar or higher than the mean for undisturbed unurned cremations from archaeological contexts (44.1mm: McKinley 1994a: 340), the percentages of bones in the 10mm sieve (19.2-52.7%: Table 6.3) were lower than the mean values from archaeological cremations (55.2%: McKinley 1994a: 340).

Table 6.3: Fragmentation levels of Middle Neolithic cremations.

Deposit	*Maximum bone length (mm)*	*Bone weight in g (%) 10mm sieve*	*Bone weight in g (%) 5mm sieve*	*Bone weight in g (%) 2mm sieve*
Bryn Gwyn	44	199.3 (19.2)	362.3 (34.9)	475.8 (45.9)
Llandygai A252	80	406.0 (39.9)	416.9 (41.0)	194.7 (19.1)
Lower Luggy	77	444.0 (39.4)	546.7 (48.5)	136.2 (12.1)
Trelystan II	59	484.2 (52.7)	262.8 (28.6)	172.5 (18.8)

The high fragmentation rates recorded in Middle Neolithic cremation burials may be due to a number of factors. It is unlikely that variability in burial contexts had a major impact on fragmentation rates, as all deposits represented unurned cremation burials from single pit graves (section 3.1.1). Although the excavation and post-excavation analysis may have led to accidental fragmentation (McKinley 1994a, Harvig 2015), it is probable that the rates were similar between deposits as all were processed and analysed under modern conditions. As non-adult bones are more fragile than adult bones (Pinhasi and Bourbou 2008), the higher fragmentation level recorded in the Bryn Gwyn cremation burial could be due to the fact that three of the four individuals were non-adults (neonate, infant and child). The cremated bones of non-adults were found to be more fragmented than adult cremated bones within the larger samples of Early and Middle Bronze Age cremations (Tables 6.11 and 6.13). At the other end of the spectrum, cremated bones from older individuals also tend to be more susceptible to fragmentation due to the osteoporotic nature of the bone tissues (McKinley 1993, 2000). However, no such pattern was recorded in Middle Neolithic cremations, as the percentages of bone weights from the 10mm sieves from older individuals (39.4% for the middle/older adult at Lower Luggy and 52.7% for the older adult ??female from Trelystan II burial 1) were comparable to or higher than for the young/middle adult ??female from Llandygai A252 (39.9%). No differences in fragmentation rates were recorded between the young, middle and older adult categories in the Early Bronze Age sample (Table 6.11).

It is possible that the differences in fragmentation levels could reflect deliberate or accidental fragmentation if the pyres were tended or if the bones were curated for a period of time prior to deposition. For example, the insertion or removal of a wooden post in the burial pit at Bryn Gwyn may have contributed further to the fragmentation of the remains (Smith 2012: 27). However, the analysis of fragmentation rates within the larger sample of Early Bronze Age cremations (section 6.3.4), suggests that it is not possible to identify direct evidence for the accidental or deliberate fragmentation of cremation deposits. Several post-depositional factors could also account for the fragmentation of cremations, from taphonomic conditions in the burial context (e.g. soil acidity, presence of water and/or plant roots) to the excavation and analysis of the deposits. Variability in fragmentation rates most probably reflects differences in post-depositional processes within individual burial contexts, although it was beyond the scope of this study to examine the impact of these factors (section 6.3.4).

6.2 Late Neolithic (*c.* 2900-2400 BC)

6.2.1 Condition of the remains: skeletal representation and heat-induced fractures

Between 25.6-48.9% of cremated bones from Sarn-y-bryn-caled 2 were identified anatomically. Skeletal representation levels suggest that all parts of the skeletons were represented in cremations 1-3 (Table 6.4). The only identified elements in cremation 4 were cranial vault fragments (Table 6.4), although this is due to the small size (4.5g) and fragmented nature (section 6.2.4) of this disturbed cremation deposit.

Table 6.4: Skeletal representation levels for the Sarn-y-bryn-caled 2 cremations.

Deposit	*Bone weight in g (%) skull*	*Bone weight in g (%) axial*	*Bone weight in g (%) upper limbs*	*Bone weight in g (%) lower limbs*
Cremation 1	102.9 (14.0)	29.6 (4.0)	71.9 (9.8)	89.4 (12.2)
Cremation 2	10.8 (13.4)	5.6 (6.9)	8.1 (10.0)	11.4 (14.1)
Cremation 3	96.2 (13.7)	21.3 (3.0)	19.4 (2.8)	42.5 (6.1)
Cremation 4	2.2 (48.9)	-	-	-

Three (75.0%) of the cremation deposits from Sarn-y-bryn-caled 2 displayed heat-induced fractures typically associated with the cremation of flesh and soft tissues (section 4.3.3): curved transverse factures, delamination and patina in cremation 1, and curved transverse fractures in cremations 2 and 3. The cremated bones from cremation 4 only displayed longitudinal and straight transverse fractures, although this is probably due to the small and fragmented nature of this deposit. The evidence therefore suggests that the individuals represented in at least three of the cremation deposits (cremations 1-3) from the Late Neolithic Sarn-y-bryn-caled 2 penannular ditch were probably cremated as complete fleshed bodies.

6.2.2 Pyre temperature: bone colours

The old white (grade V) bone colours recorded in cremations 2-4 from Sarn-y-bryn-caled 2 suggests that the minimum temperature reached by the pyres was around or above 800°C (Wahl 2008: 150). The minimum pyre temperature for cremation 1 was probably slightly lower, between *c.* 650-700°C (Wahl 2008: 150), as suggested by the milky/mat white (grade IV) cremated bone colours recorded in this deposit. The bone colours from the four cremations from Sarn-y-bryn-caled 2 suggest that the minimum temperatures reached by the pyres and duration of the cremation processes were sufficient for the complete combustion of soft tissues and oxidisation of the bones (Mayne Correia 1997, Symes *et al* 2008).

6.2.3 Weight

Cremation weights for the three undisturbed cremation deposits (cremations 1-3) from Sarn-y-bryn-caled 2 varied between 89.1-800.7g (Table 6.5). The weights for the older adult ?female in cremation 1 (ID No. 5 in Appendix F) and young/middle adult in cremation 3 (ID No. 7 in Appendix F) are lower than the weights recorded in modern crematoria for a single adult body (876-5379g: Bass and Jantz 2002, McKinley 1993, Murad 1998, Warren and Maples 1997), but fall within the range of weights from archaeological contexts (57-2200g: McKinley 1997). This would suggest that, for whatever reason, not all cremated bones were recovered from the pyre, or that only a portion of these bones were deposited in the Sarn-y-bryn-caled 2 penannular ditch. The lowest bone weight was from cremation 2, which contained the cremated bones of a young child (ID No. 6 in Appendix F). The weight of cremated bones from infants and children are expected to be lower than for older adolescents and adults, not only due to obvious size differences, but also because their fragile nature makes them more susceptible to fragmentation during the cremation and recovery processes (McKinley 2000). No published data is currently available for the cremated bone weights from non-adults from modern crematoria. However, the bone weight for cremation 2 falls within the range of weights recorded for non-adults from the Early Bronze Age sample (Table 6.9).

Table 6.5: Weight of the Sarn-y-bryn-caled 2 cremations (*disturbed deposit).

Deposit	*Weight (g)*
Cremation 1	800.7
Cremation 2	89.1
Cremation 3	699.7
Cremation 4	4.5*

6.2.4 Fragmentation levels

Maximum bone lengths for the cremation deposits from Sarn-y-bryn-caled 2 varied between 22-71mm (Table 6.6), with a mean of 47mm. These maximum bone lengths are lower than for cremations from modern British crematoria (79-195mm: McKinley 1993: 284), but are similar to undisturbed unurned cremations from archaeological contexts (44.1mm: McKinley 1994a: 340). Between 10.9-59.1% of cremated bones were recovered from the 10mm sieve, with a mean of 30.9% (Table 6.6). The fragmentation rates of cremations 1-3 are similar or lower than the rates identified from modern crematoria (43.1-71.2%: McKinley 1993: 286) and archaeological contexts (55.3%: McKinley 1994a: 340). The higher fragmentation rate recorded in cremation 2 (Table 6.6) is probably due to that fact that it represented a non-adult, as the bones of non-adults are more fragile and therefore more susceptible to fragmentation (McKinley 2000, Pinhasi and Bourbou 2008). Another possible explanation for the high levels of fragmentation for the Sarn-y-bryn-caled 2 cremations is that these deposits represented unurned deposits in pits which are probably more susceptible to taphonomic processes within the burial contexts (section 6.3.4 for a more detailed analysis of the factors involved in the fragmentation of cremation deposits).

Table 6.6: Fragmentation levels of the Sarn-y-bryn-caled 2 cremations.

Deposit	*Maximum bone length (mm)*	*Bone weight in g (%) 10mm sieve*	*Bone weight in g (%) 5mm sieve*	*Bone weight in g (%) 2mm sieve*
Cremation 1	71	433.8 (59.1)	201.0 (26.4)	98.9 (13.5)
Cremation 2	39	8.8 (10.9)	36.0 (44.7)	35.8 (44.4)
Cremation 3	55	158.3 (22.6)	381.6 (54.5)	159.8 (22.8)
Cremation 4	22	1.4 (31.1)	2.8 (62.2)	0.3 (6.7)

6.3 Early Bronze Age (*c.* 2200-1700 BC)

6.3.1 Condition of the remains: skeletal representation and heat-induced fractures

On average 34.9% of cremated bones from Early Bronze Age cremations were identified anatomically. The skull was frequently the best represented anatomical category (mean 16.0% skeletal representation), most likely due to the fact that they are more easily identifiable even in more fragmented deposits (McKinley 1994c: 6, Wells 1960). The axial skeleton was the least represented category (mean 4.0% skeletal representation), probably because bones from the axial skeleton are more fragile and therefore more susceptible to fragmentation. On average 5.8% of cremated bones were from the upper limbs and 8.1% from the lower limbs. The levels of skeletal representation in Early Bronze Age cremations were lower than the expected percentages of bone weights for each anatomical category (18.2% for the skull, 20.6% for the axial skeletal, 23.1% for upper limbs and 38.1% for lower limbs: McKinley 1994c: 6). The lower levels of identified bone fragments is most likely to be due to the fact that the cremation deposits analysed were often highly fragmented (section 6.3.4). A small proportion of cremation deposits (n=13, 6.1%) contained no identifiable bone fragments.

The majority (n=155, 84.2%) of deposits contained skeletal elements from all or most parts of the skeleton (skull, axial, upper limbs and lower limbs). In 16 (8.7%) cremation deposits only skull fragments were identified, although in all but three cases – Bedd Branwen E, J and M which only contained non-adult petrous temporal bone(s) – unidentified long bone fragments were also represented. These deposits came from badly disturbed contexts or were excavated in the antiquarian period, when it is suspected that often only the largest or identifiable bones were kept or deposited in museum collections. It is unlikely that the non-adult petrous temporal bones from pots E, J and M from Bedd Branwen represent the only surviving elements from taphonomic processes which destroyed less dense bone fragments as cremated bone from other near-by burials were well preserved (Lynch 1971: 24-27). There is therefore no evidence for the cremation of parts of the body and/or for the selection of cremated bones from specific anatomical parts for deposition in Early Bronze Age burial practices, expect for deposits E, J and M from Bedd Branwen.

The majority of bone deposits (n=148, 80.4%) displayed curved fractures, delamination and/or patina, types of heat-induced modifications usually associated with the cremation of fleshed bodies (section 4.3.3). Thirty (16.3%) deposits displayed only longitudinal and/or straight transverse fractures, which are typically associated with the cremation of dry bones (Kennedy 1996). However, all of these deposits came from badly disturbed contexts and/or showed extensive taphonomic damage. Factors such as post-depositional disturbances, soil erosion and water-damage lead to the fragmentation of cremated bones (which makes the identification of curved fractures difficult) and to a loss of details on bone surfaces (where patina and delamination would normally be identified). There is therefore no evidence for the cremation of dry bones in the Early Bronze Age period. The analysis of skeletal representation levels and heat-induced modifications suggest that burial practices for this period probably involved the cremation of complete fleshed bodies.

6.3.2 Pyre temperature: bone colours

Most Early Bronze Age cremation deposits (n=164, 89.2%) displayed milky/mat/old white colours (combustion grades IV and V) (Table 6.7). In these cases the cremation process was efficient enough for the complete combustion of soft tissues and calcination or oxidisation of the bones, with minimum temperatures reached by the pyres of around or above 650-700°C (Mayne Correia 1997, Stiner *et al* 1995, Wahl 2008). In some instances unerupted teeth of juveniles, protected from the fire inside the maxilla and mandible, or some of the thicker long bones, which take a longer period of time to oxidise, exhibited light grey colours.

Table 6.7: Combustion grades based on bone colours recorded in Early Bronze Age cremations (based on the grade system in Wahl 2008: 149-150).

Grade	*Colour*	*Temperature*	*No. of deposits*	*% of deposits*
I	Yellowish-white, ivory	To *c.* 200-250°C	-	-
II	Brown, dark brown, black	*c.* 300-400°C	-	-
III	Grey	*c.* 550°C	7	3.8
III-IV	Milky light grey, bluish grey	*c.* 550-700°C	13	6.1
IV	Milky/mat cretaceous white	*c.* 650-700°C	43	23.4
V	Old white	*c.* 800°C and above	121	65.8

Twenty cremated bone burials (10.9%) had reached combustion grades of III to III-IV (Table 6.7), with the majority of bones with black and blue colours, whilst others had a mixture of black, blue, grey and white colours. Variability in bone colours indicate that full oxidation of the bones had not occurred, either because pyre temperatures were too low (between *c.* 400-700°C), or because the bones had not been exposed to fire for a long enough period of time. Several reasons may account for this, such as adverse weather conditions, insufficient amount of wood placed on the pyre, or the collapse of the pyre (McKinley and Bond 2005, Walker *et al* 2008).

Lower limb bones were often the least well cremated skeletal elements, probably due to the amount of soft tissue coverage and thickness of the cortical bone (Mayne Correia 1997, Symes *et al* 2008). In some cases the cranial vault had reached a lower combustion grade than the rest of the deposit, as for example in Braich Llwyd cremation 1, Druid's Circle primary cist and Maesymynan, possibly because the head may have been located on the edge of the pyre where maximum pyre temperature is not reached (McKinley 2008). In some cremations with multiple individuals, the bones from each individual had reached different combustion grades, as for example Afon Wen SF3 (grades IV and V), Fan 22 (grades III and IV), Llanymynech 1135 (grades III and IV) and 1136 (grades III and V) and Marlborough Grange CI (grades III and V). It may be that one of the bodies had been placed on the edge of the pyre, where the minimum temperature reached is lower, or more likely that the bodies had been cremated on different pyres, and the bones deposited together in the burial context.

6.3.3 Weight

The weights of Early Bronze Age cremation deposits varied between 0.3-8956.3g, with a mean of 770.7g (978.1g if disturbed burials are excluded, and 913.2g if the Pillar of Eliseg outlier is excluded) (Table 6.8, Figure 6.1). Cremation deposits in cists were on average larger (1376.0g) than cremation deposits from pits (986.6g) (Table 6.8). Urned cremation deposits (i.e. cremated bones placed inside a pottery vessel) were also on average larger (1078.1g) than unurned cremation deposits (915.7g) (Table 6.8).

Table 6.8: Range and mean weights of Early Bronze Age cremations.

	No. of deposits	*Range (g)*	*Mean (g)*
All	184	0.3-8956.3	770.7
Undisturbed	124	0.3-8956.3	978.1
Undisturbed – cist	21	3.0-8956.3	1376.0
Undisturbed – pit	83	0.9-4533.5	986.6
Undisturbed – urned	61	0.7-4533.5	1078.1
Undisturbed – unurned	60	0.9-8956.3	915.7

Bone weights for undisturbed cremation deposits with a single non-adult were on average (366.5g) smaller than deposits with a single adult (726.6g) (Table 6.9). Cremation deposits with a single adult male were also on average (1223.7g) slightly larger than deposits with a single adult female (906.3g). The largest cremated bone deposits contained multiple individuals (mean 1544.4g).

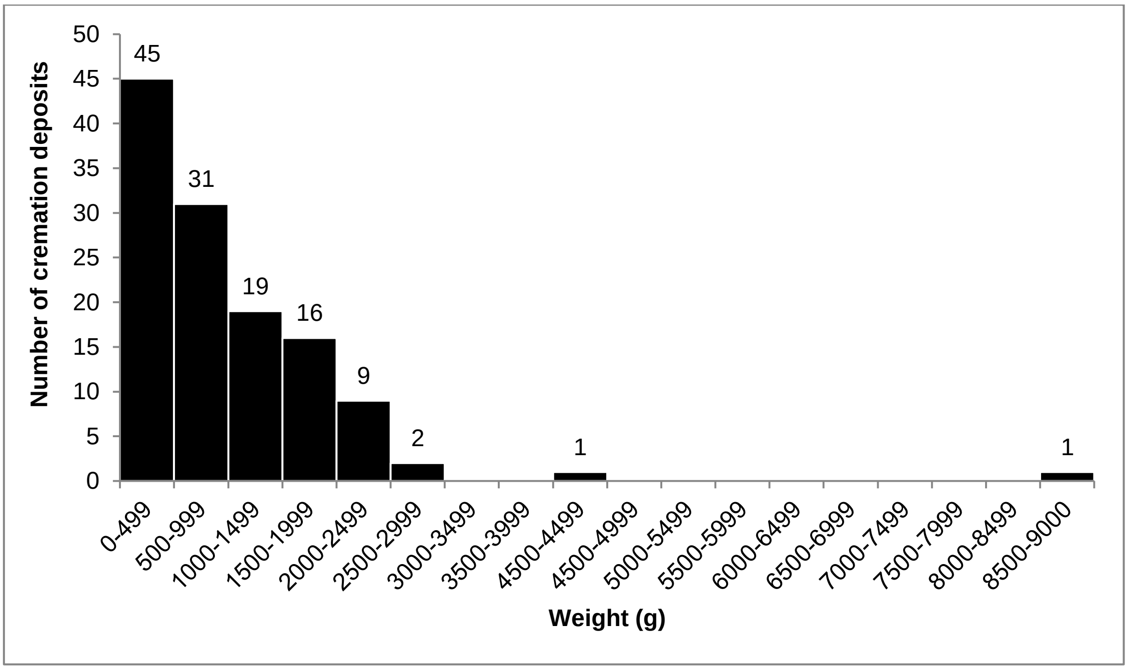

Figure 6.1: Weight of Early Bronze Age cremation deposits (disturbed deposits excluded).

Table 6.9: Range and mean weights of Early Bronze Age cremations by age and sex (disturbed deposits excluded).

	No. of deposits	*Range (g)*	*Mean (g)*
Single non-adult	20	0.7-1112.7	366.5
Single adult	50	4.6-2611.2	726.6
Single adult male	12	336.3-2611.2	1223.7
Single adult female	5	279.6-1841.1	906.3
Multiple individuals	51	281.7-8956.3	1544.4

The mean bone weight for a single adult from Early Bronze Age cremations (726.6g) falls below the expected range of weights for modern cremations (876-5379g: Bass and Jantz 2002, McKinley 1993, Murad 1998, Warren and Maples 1997), but is within the range of weights recovered for burials from archaeological contexts (57-2200g: McKinley 1997). This would suggest that not all the cremated bones were collected from the pyre or deposited in the burial context. It is possible that the variability in bone weights may reflect the impact of random factors, such as adverse weather conditions at the time the bones were collected (McKinley 1994c: 85). The amount of time spent collecting the bones at the pyre may also have reflected the social status of the individual (Wahl 2008). It is also possible that some of the cremated bones may have been circulated between the mourners (Brück 2009), or were deposited elsewhere as token deposits.

6.3.4 Fragmentation levels

Maximum bone lengths in Early Bronze Age cremations varied between 8-148mm, with a mean of 58mm (Table 6.10). Between 0-100% (mean 49.9%) of cremated bones were recovered from the 10mm sieve (Table 6.10, Figure 6.2). Cremation deposits from cists were slightly less fragmented than deposits from pits (on average 4mm longer and 1.0% more bones in the 10mm sieve). Urned cremations (i.e. cremated bones placed inside a pottery vessel) were also slightly less fragmented than unurned deposits (on average 5mm longer and 3.9% more bones in the 10mm sieve). Burial context (cist versus pit) and burial type (urned versus unurned) appear to have a slight impact on the fragmentation levels of Early Bronze Age cremations.

Table 6.10: Fragmentation levels of Early Bronze Age cremations (Und = undisturbed).

	No. of deposits	*Max bone length (mm) (mean)*	*% bones in 10mm sieve (mean)*	*% bones in 5mm sieve (mean)*	*% bones in 2mm sieve (mean)*
All	184	8-148 (58)	0-100 (49.9)	0-85.1 (31.2)	0-100 (15.2)
Undisturbed	124	8-148 (64)	0-100 (50.2)	0-64.5 (32.5)	0-100 (14.4)
Und: cist	22	17-148 (68)	0-90.0 (50.6)	0-60.3 (31.7)	0-65.5 (13.1)
Und: pit	87	8-137 (64)	0-100 (49.6)	0-64.5 (32.6)	0-100 (14.7)
Und: urned	64	10-129 (66)	0-100 (51.9)	0-54 (30.0)	0-100 (15.5)
Und: unurned	60	8-148 (61)	0-95.7 (48.0)	0-64.5 (35.3)	0-65.5 (13.4)

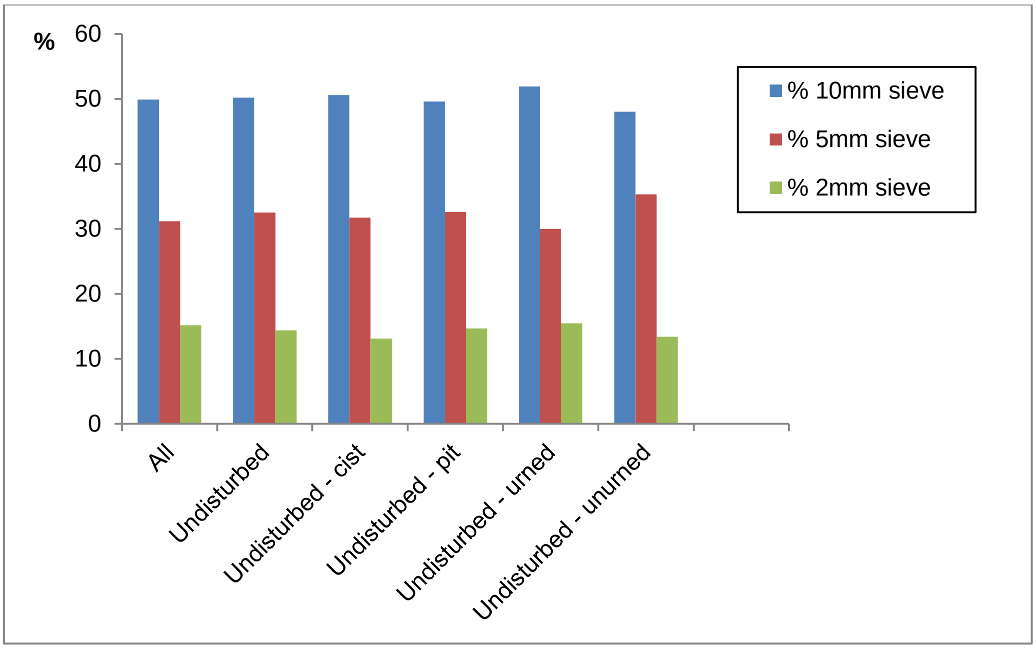

Figure 6.2: Fragmentation levels of Early Bronze Age cremations.

The mean maximum bone lengths recorded in Early Bronze Age cremations (Table 6.11) are lower than for modern cremations (79-195mm: McKinley 1993: 284), but compare to cremations from archaeological contexts (58.0mm for all deposits and 64.8mm for undisturbed deposits: McKinley 1994a: 340). Although mean maximum bone lengths were higher for unurned deposits (compared to 44.1mm in McKinley 1994a: 340), the mean was significantly lower for urned deposits (compared to 134mm in McKinley 1994a: 340). The mean percentages of bone weight in the 10mm sieve were also lower than the rates recorded from archaeological deposits reported by McKinley (55.2-86.1%: McKinley 1994a: 340). This therefore suggests that Early Bronze Age cremations in Wales were generally more fragmented than the sample of *c.* 4000 multi-period deposits examined by McKinley (1994a).

The cremated bones of non-adults were on average more fragmented than the cremated bones of adults, with mean maximum bone lengths of 49mm and 67mm and mean percentages of bones from the 10mm sieve of 49.6% and 52.1% for non-adults and adults respectively (Table 6.11, Figure 6.3). No patterns were identified in the fragmentation rates between individual age categories (i.e. children and adolescent in the non-adult category and young, middle and older adults in the adult category) (Table 6.11). Although the mean maximum bone length for adult males was 11mm greater than for adult females, there were no large differences in the mean percentages of bone weights from the three sieves (Table 6.11). Sex does not appear therefore to have a major impact on the fragmentation rates of Early Bronze Age cremations.

Table 6.11: Fragmentation levels of Early Bronze Age cremations by age and sex (disturbed deposits excluded).

	No. of deposits	*Maximum bone length (mm)*	*% bones in 10mm sieve (mean)*	*% bones in 5mm sieve (mean)*	*% bones in 2mm sieve (mean)*
Neonate/infant	0	-	-	-	-
Children	12	17-75 (55)	0-62.5 (42.5)	0-48.7 (34.3)	4.9-100 (23.3)
Adolescent	3	33-54 (46)	24.6-58.6 (36.7)	36.7-43.1 (39.6)	3.7-32.3 (22.7)
Non-adult	*36*	*16-90 (49)*	*0-100 (49.6)*	*0-54 (31.1)*	*0-100 (19.2)*
Adult: young	6	33-75 (62)	33.2-96.2 (55.0)	3.1-54.5 (32.4)	0.7-18.5 (12.6)
Adult: middle	4	37-86 (66)	25.2-71.4 (54.0)	22.4-41.4 (32.5)	6.2-33.4 (13.5)
Adult: older	14	45-137 (86)	36.2-83.3 (58.2)	14.4-44.9 (26.7)	1.0-33.7 (14.1)
Adult	*81*	*21-137 (67)*	*16.1-96.2 (52.1)*	*3.1-64.5 (33.8)*	*0-39.2 (14.1)*
Adult: male	12	45-137 (78)	30.6-85.8 (54.9)	13.4-45.2 (29.1)	0.8-33.7 (16.1)
Adult: female	8	37-86 (67)	25.2-96.2 (54.4)	3.1-44.9 (32.4)	0.7-33.4 (13.1)

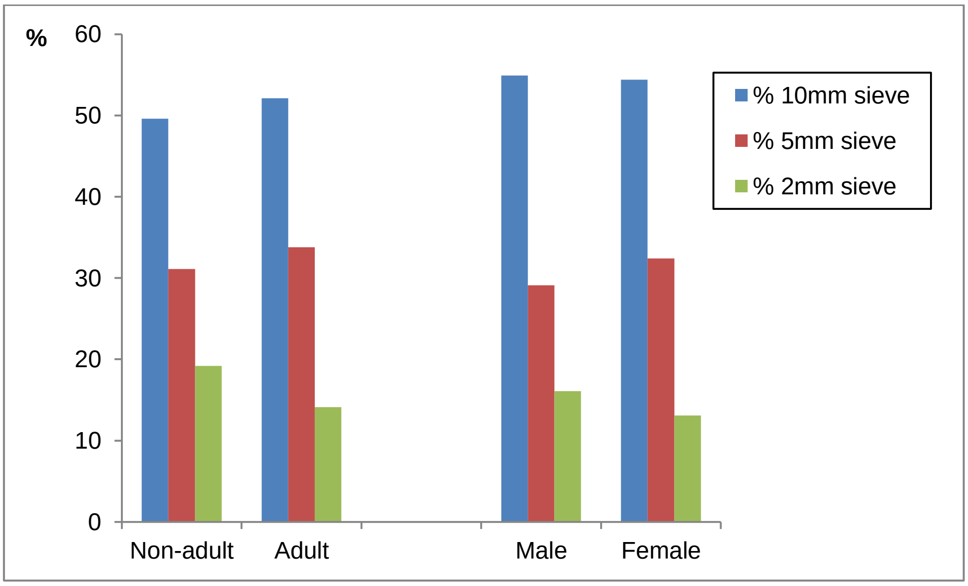

Figure 6.3: Fragmentation levels of Early Bronze Age cremations based on age and sex.

6.4 Middle Bronze Age (*c.* 1700-1200 BC)

6.4.1 Condition of the remains: skeletal representation and heat-induced fractures

Between 0% (Capel Eithin C15) and 74.4% (Kilpaison Burrows CII) (mean 41.2%) of cremated bones were identified anatomically in the Middle Bronze Age cremations analysed. In 10 (71.4%) cremation deposits all anatomical categories (skull, axial, upper limbs and lower limbs) were represented. Two (14.3%) deposits did not contain cremated bone fragments from the axial skeleton, probably as elements from this part of the skeleton are more susceptible to fragmentation through taphonomic processes (the axial skeleton was the least represented anatomical category in Early Bronze Age cremations: section 6.3.1). In one (6.1%) cremation burial (Penmaenmawr 280 cist B), only skull fragments were identified, although the deposit also contained unidentified long bone fragments. The skull was generally the best represented anatomical category (mean 14.6% skeletal representation), followed by the lower limbs (13.9%), upper limbs (8.9%) and axial skeleton (3.8%).

Thirteen (92.9%) cremation deposits contained at least one type of heat-induced modification associated with the cremation of fleshed bodies (curved transverse fractures, delamination and patina: section 4.3.3). Although longitudinal and straight transverse fractures were the only heat-induced modifications recorded in the Capel Eithin C15 cremation, this is probably due to the heavily fragmented and weathered nature of the deposit (the identification of curved transverse fractures, delamination and patina is difficult in deposits heavily affected by taphonomic processes: section 6.3.1). The levels of skeletal representation and types of heat-induced fractures identified in Middle Bronze Age deposits therefore suggest the cremation of complete fleshed bodies.

6.4.2 Pyre temperature: bone colours

The majority (n=11, 78.6%) of cremation deposits were well cremated, with seven deposits with a combustion grade IV (milky/mat white bone colours) and four with a combustion grade V (old white). Pyre temperature in these cases had reached a minimum of *c.* 700-800°C (Wahl 2008: 150), which is sufficient for the complete combustion and oxidisation of the bones (Mayne Correia 1997, Symes *et al* 2008). Three (21.4%) deposits (Kilpaison Burrows CII and CIV, Six Wells 271') were less well cremated, with a combustion grade of III-IV (black, grey and blue colours), which indicates that minimum pyre temperatures had reached *c.* 550-700°C (Wahl 2008: 150). Although all soft tissues are combusted at these temperatures, the bones are not completely oxidised (Mayne Correia 1997, Stiner *et al* 1995). This indicates that in these cases the amount of fuel, duration of the cremation process and/or oxygen availability levels were not adequate for the complete oxidisation of bony tissues (McKinley 2008, Walker *et al* 2008).

6.4.3 Weight

Middle Bronze Age cremation deposits varied in weight between 32.8-1262.7g, with a mean of 353.1g (390.7g if disturbed deposits are excluded) (Table 6.12, Figure 6.4). Cremations with a single non-adult were on average smaller (276.3g) than cremations with a single adult (426.6g) (Table 6.12). Bone weights for cremations with a single adult fall below the weights recorded from modern crematoria (876-5379g: Bass and Jantz 2002, McKinley 1993, Murad 1998, Warren and Maples 1997), except for Six Wells 271' (1262.7g), but are within the ranges from archaeological deposits (57-2200g: McKinley 1997). Middle Bronze Age burial rites did not therefore involved the complete collection of cremated bones at the pyre and/or deposition within the burial contexts.

Table 6.12: Range and mean weights of Middle Bronze Age cremations.

	No. of deposits	*Range (g)*	*Mean (g)*
All	14	32.8-1262.7	353.1
Undisturbed	12	53.7-1262.7	390.7
Undisturbed: single non-adult	5	53.7-505.6	276.3
Undisturbed: single adult	5	63.7-1262.7	426.6

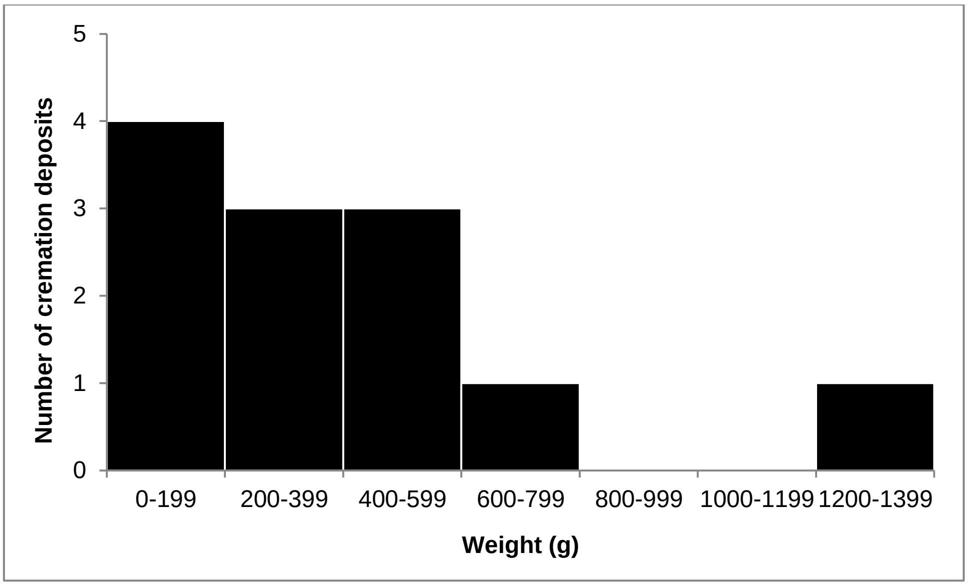

Figure 6.4: Weight of Middle Bronze Age cremation deposits (disturbed deposits excluded).

6.4.4 Fragmentation levels

Maximum bone lengths in Middle Bronze Age cremations varied between 32-83mm, with a mean of 55mm (Table 6.13). On average around half (51.5%) of cremated bones were recovered in the 10mm sieve. Cremations from cists were more fragmented (48mm mean maximum bone length and 31.5% of bones in the 10mm sieve) than cremations from pits (60mm mean maximum bone length and 60.5% of bones in the 10mm sieve) (Figure 6.5). However, this is probably because two of the three individuals from cists were non-adults (infant and young child) which tend to be more fragmented than adults (50mm mean maximum bone length and 44.2% of bones in the 10mm sieve for non-adults and 56mm mean maximum bone length and 62.5% of bones in the 10mm sieve for adults) (Table 6.14, Figure 6.6). Urned cremations were on average less fragmented (56mm mean maximum bone length and 54.3% of bones in the 10mm sieve) than unurned cremations (52mm mean maximum bone length and 40.3% of bones in the 10mm sieve).

Table 6.13: Fragmentation levels of Middle Bronze Age cremations (Und = undisturbed).

	No. of deposits	*Max bone length (mm) (mean)*	*% bones in 10mm sieve (mean)*	*% bones in 5mm sieve (mean)*	*% bones in 2mm sieve (mean)*
All	14	32-83 (55)	9.4-86.9 (51.5)	10.6-65.8 (33.0)	0.6-61.0 (15.4)
Undisturbed	12	32-83 (55)	9.4-86.8 (49.6)	11.0-65.8 (33.9)	0.6-61.0 (16.5)
Und: cist	3	32-70 (48)	9.4-63.9 (31.5)	25.5-65.8 (48.6)	10.6-24.8 (20.0)
Und: pit	8	32-83 (60)	23.9-86.8 (60.5)	11.0-58.4 (29.9)	0.6-28.9 (9.6)
Und: urned	8	32-83 (56)	16.6-86.2 (54.3)	13.2-58.4 (29.3)	0.6-61.0 (16.3)
Und: unurned	4	32-74 (52)	9.4-86.8 (40.3)	11.0-65.8 (43.3)	1.2-24.8 (16.5)

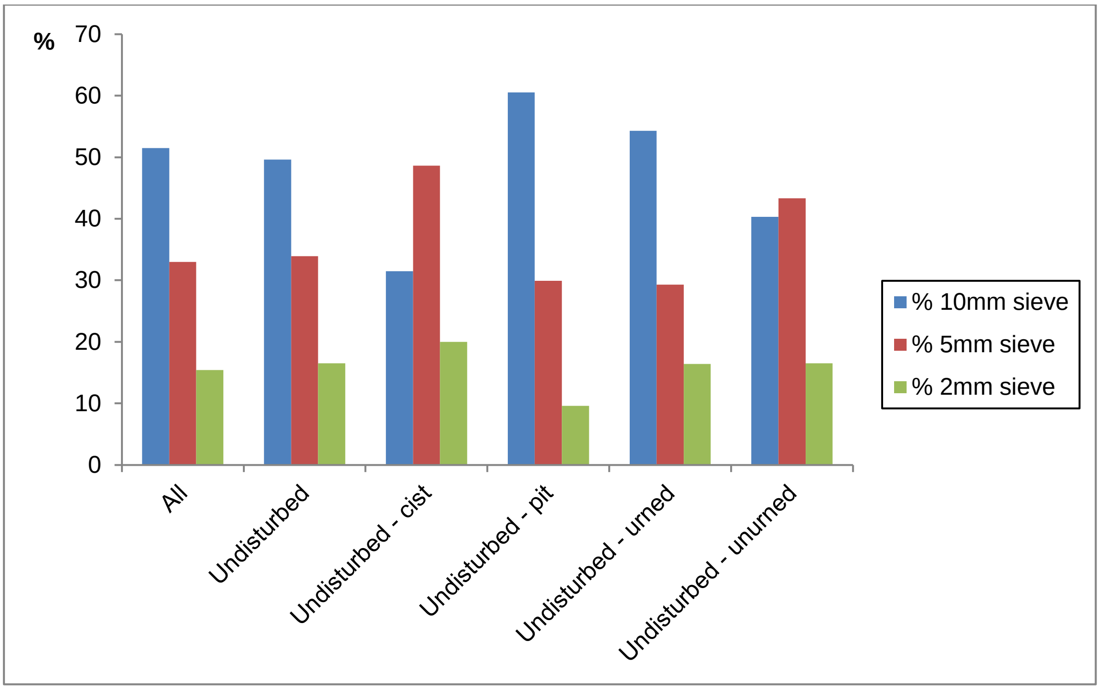

Figure 6.5: Fragmentation levels of Middle Bronze Age cremations.

Table 6.14: Fragmentation levels of Middle Bronze Age cremations by age (disturbed deposits excluded).

	No. of deposits	*Max bone length (mm) (mean)*	*% bones in 10mm sieve (mean)*	*% bones in 5mm sieve (mean)*	*% bones in 2mm sieve (mean)*
Non-adult	5	32-74 (50)	9.4-86.8 (44.2)	11.0-65.8 (32.2)	1.2-61.0 (23.6)
Adult	5	32-70 (56)	40.7-86.2 (62.5)	13.2-58.4 (30.9)	0.6-15.5 (6.6)

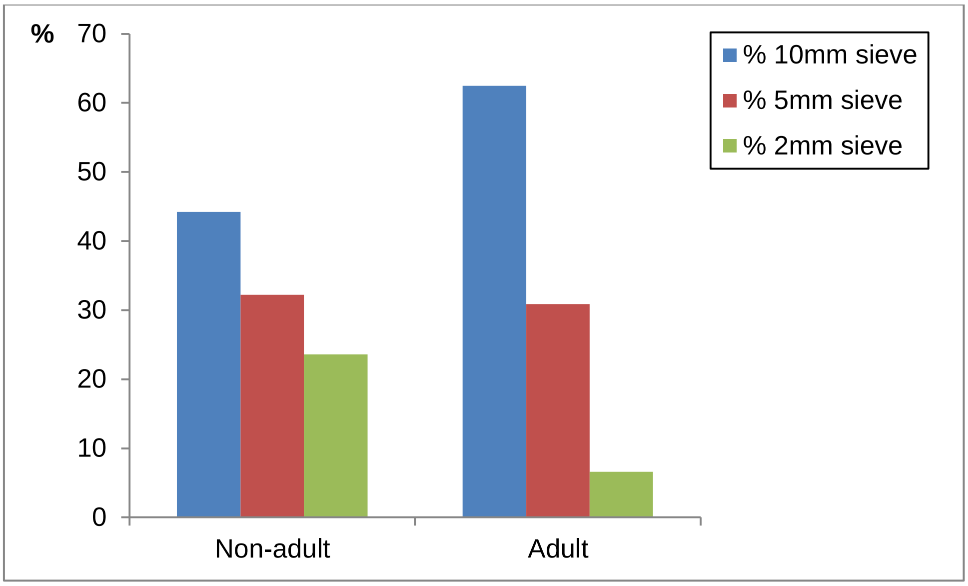

Figure 6.6: Fragmentation levels of Middle Bronze Age cremations based on age.

6.5 Changes in pyre technology across time

6.5.1 Condition of the remains: skeletal representation and heat-induced fractures

Between 71.4-100% of cremations from the four chronological periods examined contained cremated bones from all four anatomical categories (skull, axial, upper limbs and lower limbs) (sections 6.1.1, 6.2.1, 6.3.1, 6.4.1). The fact that not all anatomical categories were represented in some cremations was probably due to taphonomic factors, as the identification of axial, upper limb and lower limb bones in highly weathered and fragmented deposits proved to be difficult. There is therefore no evidence for the deliberate selection of cremated bones from certain parts of the skeleton, except for the petrous temporal bones in deposits E, J, and M at Bedd Branwen (section 6.3.1).

The skull was the best represented anatomical category across all four periods, with between 10.9-22.5% (mean 16.3%) of the bone fragments from this part of the skeleton (Table 6.15, Figure 6.7). Between 5.7-8.9% (mean 6.7%) of cremated bones represented upper limbs and 6.3-13.9% (mean 9.1%) lower limbs. The least represented category was the axial skeleton, with on average between 3.0-4.0% (mean 3.6%) of bones from this category. The skeletal representation levels from Middle Neolithic to Middle Bronze Age cremations are considerably lower than the expected proportions (18.2% for the skull, 20.6% for the axial skeletal, 23.1% for upper limbs and 38.1% for lower limbs:

McKinley 1994a: 6). However, this is probably due to the fragmented nature of the cremations examined (section 6.5.3) which limited the number of identifiable bone fragments in each deposit.

Table 6.15: Summary of skeletal representation levels for cremations per period (MN = Middle Neolithic, LN = Late Neolithic, EBA = Early Bronze Age, MBA = Middle Bronze Age).

Period	*Range (mean) % weight skull*	*Range (mean) % weight axial*	*Range (mean) % weight upper limbs*	*Range (mean) % weight lower limbs*
MN	6.6-18.3 (10.9)	1.5-5.5 (3.0)	1.2-10.8 (6.5)	4.6-8.0 (6.3)
LN	13.4-48.9 (22.5)	0-6.9 (3.5)	0-10.0 (5.7)	0-14.1 (8.1)
EBA	0-100 (16.0)	0-46.1 (4.0)	0-50.3 (5.8)	0-38.6 (8.1)
MBA	0-30.8 (14.6)	0-16.5 (3.8)	0-22.8 (8.9)	0-29.9 (13.9)

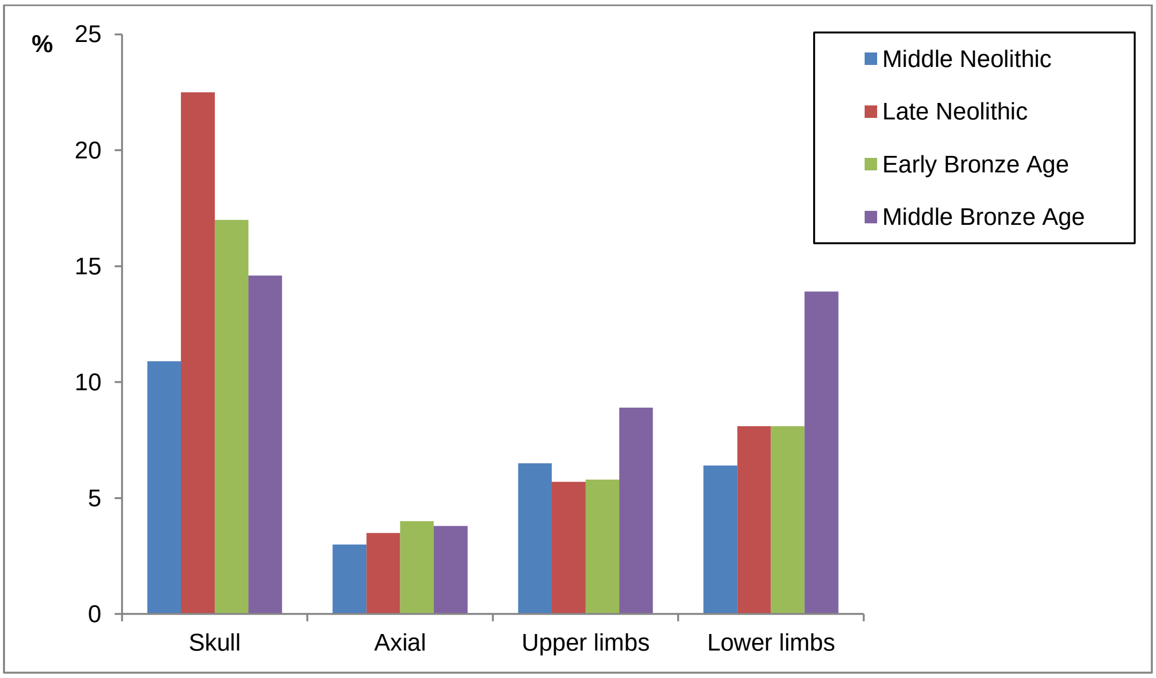

Figure 6.7: Mean percentages of skeletal representation levels in Middle Neolithic to Middle Bronze Age cremation deposits.

Between 75.0-100% of cremation deposits from the four chronological periods contained at least one type of heat-induced modification typically associated with the cremation of fleshed bodies (curved transverse fractures, delamination and patina: section 4.3.3) (sections 6.1.1, 6.2.1, 6.3.1, 6.4.1). The remainder of deposits displayed only longitudinal and/or straight transverse fractures, which are thought to be associated with the cremation of dry bones (Kennedy 1996). However, as all these deposits came from disturbed contexts and/or showed extensive taphonomic damage, there is no evidence for the cremation of dry bones for the periods examined. The analysis of skeletal representation levels and types of heat-induced modifications suggests that cremation rites for the Middle Neolithic, Late Neolithic, Early Bronze Age and Middle Bronze Age periods involved the cremation of complete fleshed bodies.

6.5.2 Pyre temperature: bone colours

The majority of cremation deposits for each period were well cremated (combustion grades IV-V) (Figure 6.8), with minimum pyre temperatures of *c.* 700-800°C (Wahl 2008: 150). This indicates that in the majority of cases the cremation process was efficient enough for the bones to reach full oxidation in terms of the amount of fuel used, the temperature reached by the pyre, the duration of the cremation, and oxygen levels (McKinley 2008, Walker *et al* 2008). However, a small proportion of deposits from the Early Bronze Age (5.6%) and Middle Bronze Age (21.4%) were less well cremated (combustion grades III and III-IV). Bone colours recorded in these deposits suggest that minimum pyre temperatures reached between *c.* 550-700°C (Wahl 2008: 149), temperatures which are sufficient for the combustion of soft tissues, but not the complete oxidation of bony tissues (Mayne Correia 1997, Stiner *et al* 1995). Several factors may account for this, from the amount of wood used on the pyre, the duration of the cremation process, or the configuration of the pyre which impacted on oxygen levels. However, it is not possible to assess which of these factors were responsible for the lower combustion grades recorded based on the osteological evidence.

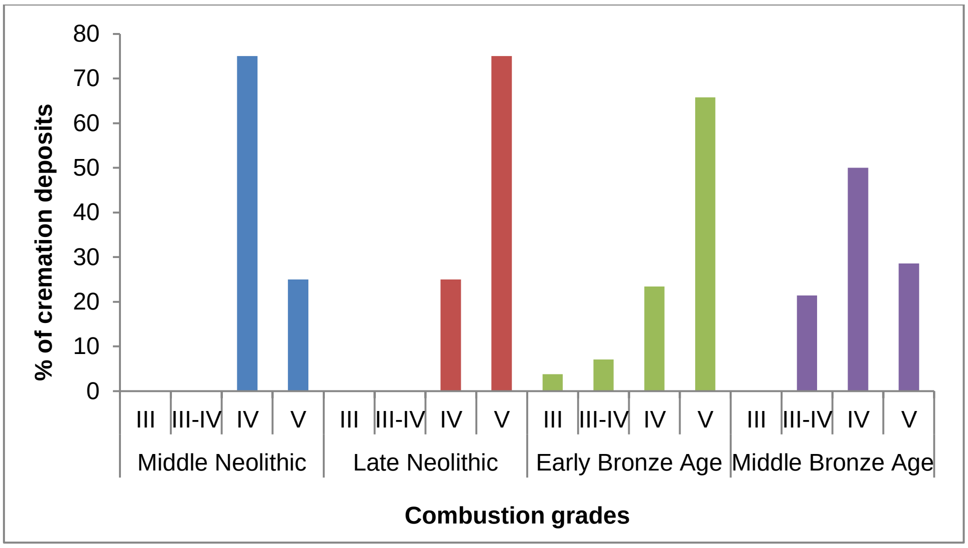

Figure 6.8: Proportions of cremations with each combustion grade for each chronological period.

6.5.3 Weight

Cremation weights were on average greater in the Middle Neolithic (mean 1142.2g) than in the Late Neolithic (mean 529.8g), although the samples are too small to assess whether this represents a genuine pattern within the burial data (Table 6.16). Bone weights were more variable in the Early Bronze Age period (between 0.3-8956.3g) and on average (978.1g) greater than in the Late Neolithic period. Cremation weights were on average smaller in the Middle Bronze Age (mean 390.7g) than in the three other chronological periods (Table 6.16). It therefore appears that, although cremation practices probably involved the cremation of complete fleshed bodies (section 6.5.1), not all cremated bones were collected from the pyre and/or buried.

Table 6.16: Range and mean bone weights of cremations per period (disturbed deposits excluded).

Period	*No. of cremations*	*Minimum bone weight (g)*	*Maximum bone weight (g)*	*Mean bone weight (g)*
Middle Neolithic	4	1036.7	1305.0	1142.2
Late Neolithic	3	89.1	800.7	529.8
Early Bronze Age	124	0.3	8956.3	978.1
Middle Bronze Age	12	53.7	1262.7	390.7

6.5.4 Fragmentation levels

Mean maximum bone lengths for undisturbed cremations varied between 55-65mm (sections 6.1.4, 6.2.4, 6.3.4, 6.4.4). Mean maximum bone lengths were lower for the Late Neolithic (55mm) and Middle Bronze Age (55mm) than for the Middle Neolithic (65mm) and Early Bronze Age (64mm) (Table 6.17). The mean percentages of cremated bones recovered from the 10mm sieves were lower for Middle Neolithic (36.8%) and Late Neolithic (30.9%) deposits than for Early Bronze Age (50.2%) and Middle Bronze Age deposits (49.6%) (Figure 6.9). The fragmentation levels recorded in this analysis indicate that cremation deposits from *c.* 3600-1200 BC in Wales were more fragmented than the sample of *c.* 4000 multi-period cremations examined by McKinley (1994a: 340), where a mean maximum bone length of 64.8mm and a mean percentage of bones greater than 10mm of 58.7% were recorded for undisturbed deposits.

Table 6.17: Mean maximum cremated bone lengths for each chronological period (disturbed deposits excluded).

Period	*Mean maximum bone length (mm)*
Middle Neolithic	65
Late Neolithic	55
Early Bronze Age	64
Middle Bronze Age	55

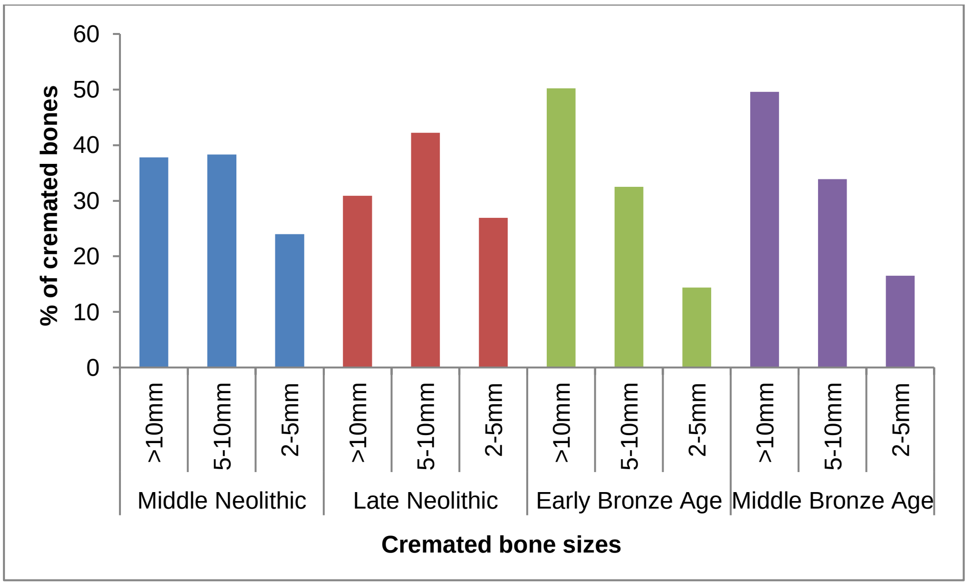

Figure 6.9: Mean proportions of cremated bones from the 10mm, 5mm and 2mm sieves for undisturbed deposits from each chronological period.

6.5.5 Animal bones in MN-MBA cremation ritual practices

No animal bones were identified in the Middle and Late Neolithic cremation deposits examined in this study. 41 (22.3%) Early Bronze Age cremation deposits were found to contain cremated animal bone fragments, which varied in weight between 0.3-236.1g, with a mean of 23.1g (Table 6.18). In some cases, only a single fragment, or fragments from a single skeletal element, were identified such as, for example, unfused long bone epiphyses (e.g. Afon Wen SF4 and Allt y Garn), teeth (e.g. Welsh St Donats 2 primary burial and Welsh St Donats 3 burial 4), cranial vault fragments (e.g. Llanymynech) and ribs (e.g. Gledlom Farm Y131). In other instances cremated bones from various parts of the skeleton were recorded, which included fragments from cranial vaults, vertebrae, ribs, long bone shafts and/or forefoot/hindfoot bones, as for example in deposits Brenig 40, Capel Eithin C1, Fan Foel cist cremation burial, Friar's Point 5, Penllwyn and Ysceifiog CI. Although this study did not include a detailed analysis of cremated animal bones due to time constraints, at least three different animal species were identified based on the general morphology and size of bone features: pig, sheep/goat and cattle/cattle-sized mammal. Two (14.3%) Middle Bronze Age cremation deposits (Kilpaison Burrows CII and Six Wells 271') also contained unidentified cremated animal bone fragments (animal bones were also recorded in the original report in deposit Kilpaison CIV, but these could not be located in the museum).

Table 6.18: Animal bone in MN-MBA cremated bone deposits.

Period	*No. of deposits*	*Range of weights (g)*	*Mean weight (g)*
Middle Neolithic	-	-	-
Late Neolithic	-	-	-
Early Bronze Age	41	0.3-236.1	23.1
Middle Bronze Age	2	6.0-9.5	8.3

Chapter 7: Discussion on the nature of Middle Neolithic to Middle Bronze Age funerary and ritual practices in Wales

The aim of this thesis was to define the character of funerary and ritual practices in Wales between 3600-1200 BC through the analysis of contextual and osteological data. This chapter provides a synthesis of the chronological, contextual and osteological data presented in previous chapters in order to examine the nature of these practices. The next sections are focused on a discussion of the key features of practices for each chronological period in Wales as well as an examination of how these practices fit within the wider British context.

A summary of the key features of Middle Neolithic to Middle Bronze Age funerary and ritual practices is presented in Table 7.1. There are, however, a number of issues associated with this summary table. Firstly, the distinction between 'funerary' and 'ritual' practices is problematic (section 2.3). In cases where past practices cannot be explained in terms of functional or practical actions – in this case activities for which the primary purpose is not associated the disposal of the dead – these actions are classified as 'ritual'. However, this view is inherently influenced by modern western perceptions of what constitutes a functional or practical action (Brück 1999). Furthermore, the funerary process in itself most likely involved a series of ritualised actions (Fowler 2015). However, the key point with Table 7.1 was to make a distinction between practices associated with the burial of the dead (funerary practices) and those for which the primary purpose did not seem to be associated with burials, as for example the tradition of circular enclosures. As such a better term for 'ritual practices' would be 'practices which are not primarily associated with the burial of the dead'. Secondly, the summary of demographics in Table 7.1 over-simplifies the complexity of the data. This data is based on the osteological examination of the skeletons which only provide us with information on the biological age-at-death and sex of these individuals. However, as discussed in section 2.2.1, biological identity represents a variable socio-culturally constructed concept which may not be related to bone markers on the skeleton (Sofaer 2006: 119). Social age, for example, is influenced by changes in status which may have been associated with rites of passages (La Fontaine 1985). Physiological changes to the body could also have played a significant role in the creation and perception of social identities throughout the life cycle (Robb 2002). Furthermore, biological sex may differ from gender, as gendered identities are socially constructed concepts which may have been played out through material culture and bodily performance (Moore 1994, Whitehouse 2007). The classification of skeletons within rigid biological age-at-death and sex categories within this study could have therefore led to the over-simplification of constructed social identities in the past. Finally, another issue relates to the preservation of material culture within the burial environment (section 2.2.3). Although this study could only focus on what had been preserved within the burial record, grave goods analyses are ultimately the most affected by poor levels of preservation. The recent discovery of the Whitehorse Hill cist on Dartmoor has highlighted the fact that some burials may have contained elaborate artefact assemblages of organic materials which do not normally survive (Jones 2016a). The summaries of grave goods associations in Table 7.1 therefore reflect patterns within the mortuary record in terms only of artefacts preserved within the burial environments.

Table 7.1: Summary of the key features of Middle Neolithic to Middle Bronze Age funerary and ritual practices in Wales.

Middle Neolithic (*c.* 3600-2900 BC) **Monument types:** pit grave, timber circle and stone arc **Funerary practices:** inhumation (n=4, 31%) and cremation (n=9, 69%) burials in medium to large pits; single individual burials more common; adults and adult females over-represented; 46% burials with grave goods **Ritual practices: 1)** token cremations at Bryn Celli Ddu stone arc, some deliberate selection of bones (petrous temporal bones of non-adults); **2)** tradition of circular enclosures (timber circle and stone arc)
Late Neolithic (*c.* 2900-2400 BC) **Monument types:** henge, penannular ditched enclosure, stone circle and passage grave **Funerary practices:** hiatus in formal burials except at passage graves in Anglesey: cremations and inhumations with between 2 (Barclodiad-y-Gawres) to 3 (Bryn Celli Ddu) individuals represented (all adults), little evidence for associated grave goods **Ritual practices: 1)** token cremations of non-adults and adults in passage graves and circular enclosures; **2)** ‘structured’ deposition of Grooved Ware and flints in pits; **3)** tradition of circular enclosures (henges, penannular ditched enclosures and stone circles)

Table 7.1 (cont'd): Summary of the key features of Middle Neolithic to Middle Bronze Age funerary and ritual practices in Wales (BT = barbed-and-tanged, LC = Low-Carinated).

Chalcolithic (*c.* 2500-2200 BC) **Monument types:** burial mound (round barrow/cairn), pit grave and circular enclosure **Funerary practices:** re-emergence of inhumation burials – 'pre-fission' Beaker burials (n=3): single adult crouched inhumation burial, some (e.g. Sutton 268') covered by circular mound; associated with 'primary' Beaker package of grave goods inc. LC Beakers, BT flint arrowheads, stone wristguard **Ritual practices:** tradition of circular enclosures (inc. large ditched enclosure at Walton Court)
Early Bronze Age (*c.* 2200-1700 BC) **Monument types:** burial mound (round barrow and burial cairn), cremation cemetery, henge, pit circle, timber circle and stone circle **Funerary practices:** inhumation (n=117, 23%) and cremation (n=399, 77%) burials; ***inhumation rite:*** crouched inhumation with a single individual most common, adults and adult males over-represented, 58% inhumations with grave goods, some age- and gender-based associations identified (section 5.7.5.1); ***cremation rite:*** most burials (72%) with one individual, but burials with multiple individuals more common (28%), no bias in age or sex of individuals represented, 62% burials with grave goods, with few age- and gender-based associations identified (section 5.7.5.2) **Ritual practices: 1)** token cremation deposits: associated with inhumation burials, deposited urned or unurned in pits in burial mounds (inc. pits with evidence for *in situ* burning) or under cist floor slabs, urned or unurned in cremation cemeteries and pit circles, in fill of stoneholes; **2)** tradition of circular enclosures (henges, pit circles, timber circles and stone circles)
Middle Bronze Age (*c.* 1700-1200 BC) **Monument types:** burial mound (round barrow and burial cairn), cremation cemetery, pit burial, standing stone, stone circle **Funerary practices:** cremation burials only (n=50), single individual burials more common, no bias in age or sex of individuals represented, 34% burials with grave goods (pottery vessels and flint flakes only) **Ritual practices: 1)** token cremation deposits in stonehole of standing stones and in cremation cemeteries or inconspicuous pits; **2)** tradition of circular enclosures (stone circles)

7.1 Middle Neolithic (*c.* 3600-2900 BC)

7.1.1 Single pit graves

Past interpretations have often focused on the idea that the tradition of single grave burials first emerged in the Later Neolithic period in association with the arrival of Beaker burials in Britain (Ashbee 1978: 133, Grimes 1951: 48). However, the burial evidence now suggests that the development of single graves occurred centuries earlier around the mid-fourth millennium BC (Gibson

2007, Thomas 1999: 151). Examples include the crouched inhumation at the base of a deep grave pit at Duggleby Howe, Yorkshire, dated to the 36th-35th centuries BC (Gibson and Bayliss 2009: 67). At Whitegrounds, Yorkshire, a crouched inhumation was placed in a pit cut into the passage of an earlier Entrance Grave between the 35th-30th centuries BC (Brewster 1984: 10). The single crouched inhumation under an oval mound at Alfrison in East Sussex also dates to the fourth millennium BC (Drewett 1975: 126, 151, Gibson 2007: 51). Five examples of Middle Neolithic pit graves have so far been identified in Wales (section 3.1.1 and Appendix F).

The Middle Neolithic tradition of single burials stands in stark contrast to the communal burials in Early Neolithic megalithic tombs, the majority of which were in use between the 40th and 37th centuries cal BC in Wales (Burrow 2003: 36-38, Kytmannow 2008). This suggests that a major shift in burial rites occurred after the 37th century BC from communal to single burials across Britain and Ireland (Bradley 2007: 89, Cooney 2000: 121). The introduction of single grave burials in the Middle Neolithic reflects major changes in the relationship with the dead, from ancestral rites in communal tombs to funeral rituals in pit graves (section 3.1.1). These funerary rituals, from the deposition of the body, sometimes with grave goods, to the permanent closure of the grave, do not only serve to commemorate specific individuals, but represent an occasion when relationships between the mourners can be re-ordered (Barrett 1990, Thomas 2000). The development of the single grave burial tradition has often been interpreted as to reflect the development of ‘an ideology of the individual’ linked to the emergence of hierarchies or chiefdoms in Neolithic societies (Darvill 2010: 163, Renfrew 1973, Shennan 1982). As Middle Neolithic single pit graves were relatively rare, the idea that this burial tradition was reserved for certain members of a community is certainly a possibility in Wales (see below).

The limited number of burials identified for the Middle Neolithic period in Wales (and elsewhere in Britain) does not suggest that a formal burial tradition existed in this period. For most of prehistory, bodies were disposed of in ways which are not archaeologically visible (section 2.2.2). It is possible that these modes of disposal were accompanied by elaborate funerary rites which cannot be identified from the archaeological evidence. Bodies may have been deposited in natural places such as caves and rockshelters (Chamberlain 2016). The Nant y Fuach cave, Denbighshire (Jones 2016b), and Gop cave, Flintshire (Dawkins 1902), both contained assemblages of human remains associated with Middle Neolithic Peterborough Ware. However, the burial data from caves must be interpreted with caution as the deposits of human bones and artefacts are often disturbed, lacking stratigraphy, and poorly recorded. For example, the skeletons recovered from Lesser Garth Cave, Glamorgan, were assumed to be prehistoric in date due to the presence of Middle Bronze Age pottery amongst the assemblage, but recent radiocarbon dates have dated the human remains to the Early Medieval period (Madgwick *et al* 2016). Bodies may also have been placed in rivers or natural waterways. Skulls recovered from Preston Docks, Lancashire, and along the River Thames, London, have returned Neolithic to medieval radiocarbon dates (Bradley and Gordon 1988, Edwards *et al* 2010, Turner *et al* 2002).

Pit grave burials therefore deviate from the normative treatments of the dead for the Middle Neolithic period. This raises important questions on the identity of these individuals: who were these people and why were they treated differently in death? The differential burial modes accorded to these individuals suggest that they were somehow different or special, although this does not necessarily imply that they were of a higher status or rank (section 2.2.2). The large pit grave at Four Crosses 5 in Powys, dated to 3341-2921 cal BC (4440±70 BP, CAR-670), contained three individual crouched inhumations, one at the centre of the pit accompanied by an Ebbsfleet Bowl, a pear-shaped stone and animal bones, and two in peripheral pits cut into the floor of the pit (Warrilow *et al* 1986: 64). Several reasons may account for the simultaneous burial of three individuals (one adult and two adolescents/adults), from, for example, accidental deaths, to inter-personal violence, or even due to an infectious disease (section 2.2.2). Although bone preservation was too poor to ascertain cause of death, what we know is that their different or special identity led them to be treated differently in death. Multiple inhumations have also been recorded elsewhere in Britain, as for example the double inhumation burial with a jet belt slider, and a polished flint knife and a triple inhumation burial in a wooden coffin at Barrow Hills, Oxfordshire (Barclay and Halpin 1999: 19-21, 28-29).

Cremation burials are often interpreted as later within the sequence of single grave burials (Loveday and Barclay 2010: 109, Thomas 1999: 153). Previous theories have linked the spread of the cremation rite to the movement of cultural groups (Kendrick and Hawkes 1932: 106-107), or to the expansion of contact networks in the Late Neolithic period (Bradley and Chapman 1986). However, the burial evidence in Wales clearly indicates that a tradition of single cremation burials existed in the second half of the fourth millennium BC. Deposit A252 from Llandygai A, dated to 3359-3013 cal BC (4480±50 BP, GrN-22954: Lynch and Musson 2001: 118), contained one adult ??female (ID No. 2 in Appendix F), and the Trelystan II cremation burial, which dates to *c.* 3331-2875 cal BC (4350±70 BP, CAR-282: Britnell 1982: 136), also contained a single adult ??female (ID No. 4 in Appendix F). The fact that burial 1 from Trelystan II contained two types of deposits, an inhumation and a cremation burial (Britnell 1982: 136), suggests that both deposit types were in use contemporaneously. In the case of Trelystan II, a deliberate choice had been made to burn the body of the first individual placed in the grave pit, whilst the second individual had been placed, probably in an extended position, in a wooden box. This again raises the possibility that differences in the social identities between people led to differential burial treatments, although the possible reasons for this remain speculative (section 2.1.2; Gibson 2016).

7.1.2 Circular enclosures

The last centuries of the fourth millennium BC are associated with the construction of the first circular enclosures in Wales. One of the earliest example is the stone arc at Bryn Celli Ddu, Anglesey, dated to *c.* 3200-3000 cal BC, which pre-dated the construction of the passage grave in the 31st-30th centuries cal BC (section 3.1.3; Burrow 2010a: 260). The central pit and three of the stoneholes of the stone arc (stones I, J and K) were associated with token amounts of cremated bones (Burrow 2010a: 256). At Meusydd I in Powys, a cremation burial, dated to 3017-2762 cal BC (4280±40 BP, Beta-249072), was placed against one of the wooden posts when the 6.2m wide timber circle was erected (Jones 2009: 48-50). The emphasis at these monuments was not placed on the deposition of individual cremation deposits, but rather on their incorporation within the circular enclosures. This therefore suggests that the primary focus at these sites was on the monuments themselves, not as funerary structures, but as places used for the performance of ceremonies or rituals associated with death. A similar practice took place at Bryn Gwyn, as pit 138, which contained a cremation burial dated to 3019-2886 cal BC (4315±35 BP, SUERC-39677: Smith 2012), formed part of an arc of pits which may have held timber posts (Smith 2012: 27). These timber posts were probably removed before the construction of the stone circle around the 29th-27th centuries cal BC (section 3.2.2).

Some Middle Neolithic pit graves in Britain were found to be located near circular enclosures (Bradley 2007: 89). However, due to the poor quality of most radiocarbon dates from the Llandygai A henge (section 3.1.4), it is not possible to assess whether the cremation burial was contemporary with the construction of the henge. At Bryn Gwyn, the cremation burial in pit 138 pre-dated the construction of the stone circle by up to two centuries (section 3.2.2). Other Middle Neolithic pit graves in Britain had been covered by a mound, as for example at Alfrison (Drewett 1975), Barrow Hills (Barclay and Halpin 1999: 19-21) and Whitegrounds (Brewster 1984). However, there is no evidence that Middle Neolithic pit graves in Wales were covered by a mound or any type of permanent visible marker (section 5.4.1). Burial 1 at Trelystan II had been covered by a small inconspicuous mound constructed from the upcast material from the pit (Britnell 1982: 137); a similar feature was also recorded around the grave pit at Duggleby Howe (Gibson and Bayliss 2009: 47). Although the pit grave at Four Crosses 5 was encircled by a 21.7m wide ring ditch (Warrilow *et al* 1986: 66), there is no evidence to suggest that material from this ditch was used to construct a mound. At Duggleby Howe, the mound was built more than 500-600 years after the central pit was dug (Gibson and Bayliss 2009: 68-69). Despite the inconspicuous nature of Welsh single pit graves, several sites were subsequently revisited for the deposition of further burials in the Early Bronze Age period (Britnell 1982: 158, Lynch and Musson 2001: 47, Warrilow *et al* 1986: 66-67). The fact that the two phases of activity were separated by several centuries despite the absence of any form of permanent marker highlights that the special significance of these burial sites was maintained through time.

Burrow (2010b) argued that the late fourth millennium BC in Wales was associated with the appearance of 'formative' henges, which are thought, based on their 'atypical' architectural forms, to pre-date the more typical or classic henges (Harding 2003: 13). However, a review of the artefactual evidence and radiocarbon dates from excavated Welsh 'formative' henges (section 3.1.4) does not support the theory that 'atypical' circular enclosures in Wales date to the late fourth millennium BC. There is therefore limited evidence for the construction of monumental structures in the Middle Neolithic period in Wales except for two circular enclosures, the *c.* 20m wide stone arc at Bryn Celli Ddu in Anglesey (Burrow 2010a, Hemp 1930) and the 6.2m wide timber circle at Meusydd I in Powys (Jones 2009) (sections 3.1.2 and 3.1.3).

7.1.3 Cremation rites

Two of the token deposits of cremated bones associated with the stone arc at Bryn Celli Ddu contained only parts of petrous temporal bones (central pit and stone K: McKinley 2006) This could indicate that a deliberate selection of bones occurred, although the possibility that the rest of the deposits were destroyed through taphonomic processes cannot be excluded. The deposition of token amounts of cremated bones is a type of practice which can be traced back to the Early Neolithic period in Wales. Several Cotswold-Severn tombs, such as for example Capel Garmon in Gwynedd (Yates and Jones 1991) and Penywyrlod in Powys (Britnell and Savory 1984), were found to contain token cremation deposits in features which pre-dated the construction of the monuments. It is probable that these token cremation deposits represented foundation deposits placed before the monuments were constructed, perhaps as a way to mark the site as a burial place. The cremated bones may have represented strong metaphors of the deceased individuals which could then be manipulated as powerful mnemonics objects (section 2.1.2). The practice of foundation deposits involves the deposition of human remains or objects before the construction of a structure (Bradley 2007: 190, Cleary 2014). This can include, for example, the inclusion of pottery sherds in the packing material of post-pits, or of quernstones at the base of drainage-gullies in late prehistoric round houses in Britain (Pope 2003: 179-180). At the prehistoric village of Cladh Hallan in the Outer Hebrides, mummified corpses were placed under the house floors as foundation deposits (section 2.1.2; Parker Pearson *et al* 2005: 60-79). Foundation deposits have also been found in association with funerary and ritual monuments in Britain, as for example the cremated bones placed under or associated with the stones at the Balbirnie stone circle in Fife (Gibson 2010a). The incorporation of human remains reflects a desire by the builders to bring a spiritual dimension to the structures, perhaps as a way to gain approval from the ancestors for their construction, or so the ancestral spirits can protect the structures and their builders (Cleary 2014).

Middle Neolithic cremation rites in Wales involved the cremation of complete and fleshed bodies (section 6.1). Bone colours recorded in these deposits (milky/mat white to old white) indicate that cremation processes – in terms of the amount of fuel used, duration of cremation and oxygen levels – were efficient enough to allow for the complete combustion of soft tissues and oxidation of the bones (section 6.1.2; Walker *et al* 2008). Middle Neolithic cremation burials varied in weight between 1036.7-1304.0g (Table 6.2). This suggests that the majority of cremated bones were collected from the pyre and deposited in the burial context (McKinley 1997). Cremation deposit weights from this period were on average (1142.2g) higher than for the Late Neolithic (529.8g), Early Bronze Age (976.1g) and Middle Bronze Age (390.7g) periods (Table 6.16). However, Middle Neolithic cremation deposits were more fragmented than deposits from the Early and Middle Bronze Age periods (section 6.5.4). The highest fragmentation rate for this period was recorded in the Bryn Gwyn cremation burial (ID No. 1 in Appendix F). This could be due to the fact that three of the four individuals represented were non-adults, as non-adult bones are more fragile and therefore more susceptible to fragmentation (Pinhasi and Bourbou 2008), or possibly due to the deliberate or accidental fragmentation of the deposit when a timber post was removed from the burial pit (Smith 2012: 27).

7.1.4 Demographics

Of the 10 human bone deposits identified for the Middle Neolithic period, four of which were examined by the author, eight (80.0%) contained a single individual (section 5.4.4). Only two (20.0%) burials contained multiple individuals, the Four Crosses 5 pit grave with three crouched inhumations (central inhumation placed on the floor of a large grave pit with two more individual inhumations placed in peripheral pits cut into the burial pit floor: section 5.4.2; Warrilow *et al* 1986: 64) and the Bryn Gwyn cremation burial with four individuals (ID No. 1 in Appendix F). Middle Neolithic burial deposits therefore predominantly contained a single individual.

The majority of burial deposits in Wales contained adults (central inhumation at Four Crosses 5, Llandygai A, Lower Luggy, Meusydd I, Trelystan II) or adolescents/adults (peripheral inhumations at Four Crosses 5) (Appendix F). The only five non-adults represented in Middle Neolithic deposits all came from cremation deposits from Anglesey, which include two of the foundation token deposits at Bryn Celli Ddu which contained parts of the petrous temporal bones of an infant and one non-adult (central pit and stone K: McKinley 2006), and three of the four individuals in the Bryn Gwyn deposit (ID No. 1 in Appendix F). This suggests that a special significance was placed on the cremated bones of non-adults in Anglesey as part of a regional variation in funerary practices. Age has been demonstrated to represent an important signifier of social identity (section 2.2.1). Young individuals who had not been through the rites of passage associated with reaching adulthood were treated differently in death. Females were found to be over-represented in Middle Neolithic burial deposits compared to males (sex ratio of 1:3 in favour of females: section 5.4.4). Gender-based differences in social identity therefore influenced burial modes in the Middle Neolithic in Wales, although the sample is too small to assess if this represents a genuine pattern within the mortuary data.

7.1.5 Grave good associations

Middle Neolithic single pit burials were often accompanied by a variety of objects, some of which (e.g. polished axes and knives, maceheads, amber/jet/shale beads, jet sliders) are often interpreted as prestige grave goods

(Gibson 2007, Kinnes 1979). However, there is no evidence that Middle Neolithic burials in Wales were accompanied by such prestige objects. Five (43.4%) burials contained grave goods, which included an Ebbsfleet bowl, pear-shaped stone and animal bones at Four Crosses 5 (Warrilow *et al* 1986: 64), a flint knife and two worked flints at Trelystan II (Britnell 1982: 136), an axe-polisher at Llandygai A (Lynch and Musson 2001: 45-46), and seven pieces of flint and a piece of quartzite at Lower Luggy (Gibson 2006: 177). However, patterns in grave good associations suggest that a special importance was placed on the primary burial in features with multiple burials, as for example the cremation burial at Trelystan II and central inhumation at Four Crosses 5. The secondary inhumation in a wooden coffin at Trelystan II (Britnell 1982: 136) and the two peripheral inhumations in pits dug into the floor of the burial pit at Four Crosses 5 (Warrilow *et al* 1986: 64) were not associated with any artefacts.

Grave goods, which have been deposited alongside the deceased within the burial context by the mourners, may represent personal possessions, or objects to be used by the deceased in the afterlife (section 2.2.3). It is possible that some of these items may have been made especially as part of the funerary process to be deposited with the corpse. However, interpretations of the significance of grave goods within archaeological contexts are problematic as one can only deal with the final, static burial record (section 2.2.3). The pottery bowl, placed near the head of the crouched inhumation at Four Crosses 5, and animal bone (calf jaw?) and pear-shaped stone (tool/weapon?), placed near the arms, could have represented food offerings to the dead or spirits associated with death, and a weapon for the deceased to use in the afterlife. The burnt flint knife and worked flints found in the Trelystan II cremation burial were probably burnt with the corpse, which suggests that these represented personal items held by the deceased. The axe polisher placed on top of the cremation burial pit at Llandygai A showed signs of wear (Lynch and Musson 2001: 45); it may also have represented a personal item placed near the remains of the deceased so it can be used in the afterlife. These objects may also have held meanings beyond their practical functions; knifes, for example, could have represented symbolic objects to sever the dead from the living (Ucko 1969: 265). However, whilst post-enlightenment thought draws clear distinctions between objects and people, this distinction may not hold true within prehistoric societies. For example, anthropologically the destruction of personal objects associated with the dead is common practice, and it is frequently the case that distinctions cannot be made between individuals and their personal possessions. The death of the individual therefore instigates a range of funerary practices that includes personal items or objects which society associates with the dead individual, extending the concept of mortuary practices beyond the physical body.

7.2 Late Neolithic (*c.* 2900-2400 BC)

7.2.1 Monument types

The radiocarbon-based evidence for Late Neolithic monuments in Wales is limited. Two stone circles have returned early third millennium BC dates, the *c.* 16m wide Bryn Gwyn stone circle in Anglesey, constructed *c.* 2900-2700 cal BC (4185±35 BP, SUERC-39678: Smith 2012: 34), and the *c.* 11m wide Dyffryn Lane I stone circle in Powys, constructed *c.* 2900-2500 cal BC (4050±50 BP, Beta-223795; 4020±40 BP, Beta-231837: Gibson 2010b: 227) (section 3.2.2). After a minimum period of *c.* 200 years, after the stone circle had become dilapidated, a *c.* 85m wide Class I henge was constructed at Dyffryn Lane I (section 3.2.3). The evidence suggests that the tradition of circular enclosures, first developed around the 33^{rd}-30^{th} centuries BC in Wales with the construction of the stone arc at Bryn Celli Ddu and timber circle at Meusydd I (section 7.1.2), carried on into the first half of the third millennium BC.

7.2.2 Circular enclosures and ritual practices

The tradition of circular enclosures in Wales is part of a wider trend associated with an increase in the number and types of monuments built at the start of the third millennium BC in Britain, which include henges, ditched enclosures, timber circles, stone circles and pit circles (Darvill 2010: 147ff). The appearance of circular enclosures at the start of the third millennium BC has been seen as to reflect major changes in the nature of Late Neolithic societies (Harding 2003: 9). Circular enclosures represented highly visible and permanent structures within the landscape in which people could periodically gather for the performance of rituals or festivals, or to trade (Bradley 2007: 128, Burgess 2001: 327, Darvill 2010: 165, Gibson 2005: 30). The development of these monuments in the Late

Neolithic period could also be interpreted as a reflection of changes in beliefs systems, perhaps linked to celebrations or ceremonies associated with solstices (Burgess 2001: 174). This period is also linked to the emergence of more complex and centralised societies in which circular enclosures could have been used to display wealth and power or to delimit territories (Burgess 2001: 325, Darvill 2010: 163, Harding 2003: 9, Renfrew 1976: 254).

Some Late Neolithic enclosures were associated with rituals linked with the commemoration of the dead. At the *c.* 8m wide penannular ring ditch at Sarn-y-bryn-caled 2 in Powys, a cremation deposit (cremation 1), dated to 3013-2888 cal BC (4315±30BP, SUERC-24176), had been placed in an undercut at the base of one of the ditch ends (Gibson 1994: 159). The three secondary cremation deposits, inserted *c.* 2900-2600 cal BC (4255±30 BP, SUERC-24172; 4145±30 BP, SUERC-24171: Gibson 2010c: 354) in the fill of the ditch terminals near the two substantial mature oak timber posts (Gibson 1994: 159), certainly emphasize the special significance placed on the entrance into the enclosure. Each of the deposits from Sarn-y-bryn-caled 2 contained the cremated bones of a single individual (ID No. 5-8 in Appendix F). Both non-adults (cremation 2) and adults (cremations 1, 3, 4) were represented in the Sarn-y-bryn-caled 2 cremations (section 5.5.4). However, bone weights suggest that only a selection of cremated bones (between 89.1-800.7g: section 6.2.3) from each individual was deposited within the enclosure. These deposits represented a random selection of bones (based on the fact that all parts of the skeletons were represented in undisturbed deposits: section 6.2.1) after the fleshed bodies had been efficiently cremated on the pyres (section 6.2.2). The evidence therefore suggests that a tradition centred upon the incorporation of cremated human bones within circular enclosures existed from the end of the fourth millennium BC (section 7.1.2) to the middle of the third millennium BC. The rituals associated with this practice varied from the deposition of only selected bones (petrous temporal bones at Bryn Celli Ddu: McKinley 2006), to token deposits (Sarn-y-bryn-caled 2: Gibson 1994: 159) and more complete cremation burials (Bryn Gwyn: Smith 2012: 27 and Meusydd I: Jones 2009: 50), each from a single individual. Artefacts were rarely deposited with the cremation deposits, expect for the burnt flint flake with cremation 1 at Sarn-y-bryn-caled 2 (Gibson 1994: 159).

The funerary evidence also indicates that formal burials were uncommon in the first half of the third millennium BC in Britain (section 5.5.3; Bradley 2007: 89, Harding and Healy 2007: 227). One of the latest example from the tradition of Middle Neolithic pit burials in Wales is the Lower Luggy cremation burial in Powys (ID No. 3 in Appendix F) dated to 3022-2706 cal BC (4280±45 BP, Beta-29332: Gibson 2006: 177). Examples of Late Neolithic burials elsewhere in Britain include the cremation deposits associated with Grooved Ware vessels from Eddisbury, Cheshire, and Yeavering, Northumberland (Manby 1999: 58), the multiple inhumation and cremation burials in the circular mound at Duggleby Howe in Yorkshire which date to around the 30th-28th centuries BC (Gibson and Bayliss 2009: 68-69), and the incomplete disarticulated inhumation burial with at least five individuals in the ditch of the oval barrow at Eynesbury in Cambridgeshire (Ellis 2004).

The 31st century BC is associated with the development of Grooved Ware pottery in southern Britain (Garwood 1999: 152, Gibson 2010a: 67). Grooved Ware pottery is often found deposited in pits, some of which showed evidence for structured deposition (Garwood 1999: 161, Thomas 2010: 9), at domestic sites or associated with circular enclosures such as henges, pit circles, timber circles and stone circles (Barclay 1999, Cowie and MacSween 1999, Gibson 1999a). Grooved Ware pottery from domestic contexts has also been identified in Wales at Trelystan (Britnell 1982) and Upper Ninepence (Gibson 1999b: 36) in Powys. Pit FB147 outside the Llandygai B henge ditch in Gwynedd, dated to *c.* 2900-2500 cal BC (4100±50 BP, GrA-20013), contained Grooved Ware sherds from a single pot and flint flakes (Lynch and Musson 2001: 71-72, 120). Multiple pits at the natural mound at Hendre in Flintshire, which contained similar assemblages of ceramics and lithics, dated to a period between *c.* 2561-2141 cal BC (3870±70 BP, CAR-1279: Brassil and Gibson 1999: 96). The first half of the third millennium BC in Wales, which also coincides with a decline in formal burial practices (see above), is therefore associated with an increase in ritualised pit depositions, for which Grooved ware pottery may have played a key role (Hamilton and Whittle 1999, Thomas 2010).

7.2.3 Passage graves

Another type of monument from the Late Neolithic period is the passage grave, of which at least two examples are found in Wales, Barclodiad-y-Gawres (Powell and Daniel 1956) and Bryn Celli Ddu (Burrow 2010a, Hemp 1930) in Anglesey. These monuments, which consist of an orthostatic passage and chamber(s) covered by a circular mound, are part of a distinctive type of monuments found mainly in Ireland and on the western coastline of Britain (Bradley 2007: 92). The Bayesian model for Bryn Celli Ddu (Figure 3.9) suggests that the tomb was constructed *c.* 3074-2956 cal BC and used for the deposition of human bone deposits for between 5-154 years (section 3.2.4; Burrow 2010a: 257).

The evidence associated with the use of the monuments includes fragments of burnt and unburnt bone from the passage floor at Bryn Celli Ddu (Burrow 2010a: 256), and scatters of cremated bones on the floor of the three stone chambers at Barclodiad y Gawres (Powell and Daniel 1956: 18-20). The burial evidence from these monuments is similar to what was found in Irish passage graves where burial rites involved the deposition of inhumation and cremation burials in the passage and chambers (Cooney 2000: 103-112). A limited number of people were found to be buried in Irish passage graves, although this was attributed to the heavy disturbance at the monuments (Bradley 2007: 105). A similar pattern has been identified in Welsh passage graves, where only a minimum number of two (Barclodiad-y-Gawres: Lisowski 1956) and three individuals (Bryn Celli Ddu: McKinley 2006) were represented (Appendix F). Although it is possible that antiquarian disturbances could account for the limited number of individuals (Burrow 2010a: 254), the only undisturbed context from a Welsh passage grave, the western chamber at Barclodiad-y-Gawres, contained the cremated bones of only two adult males (Lisowski 1956: 66). The fact that these two individuals were only represented by 488g of cremated bones (Lisowski 1956: 64) suggests that passage graves did not primarily function as funerary structures, but rather as monuments used for the performance of rituals associated with the commemoration of the dead, some of which were associated with the deposition of token deposits of cremated bones. As in Irish passage graves (Cooney 2000: 121), adults were better represented than non-adults in Welsh passage graves (section 5.4.3). Non-adults, perhaps due to their different social identities, were treated differently in passage graves to adults (Finlay 2000). In Wales, non-adults were only found in two pre-monument features at Bryn Celli Ddu (Appendix F; Burrow 2010a: 256). The restricted number of individuals represented in passage graves further supports the theory that only the remains of selected individuals were placed in these monuments (Bradley 2007: 103-104, Sheridan 1985).

7.3 Chalcolithic (*c.* 2500-2200 BC)

7.3.1 The burial evidence

The Chalcolithic period is associated with the re-appearance of single inhumation burials after a hiatus of more than 500 years in the Late Neolithic period. The only recorded Late Neolithic inhumation in Wales came from Bryn Celli Ddu (section 7.2.2). Inhumation burials from this period are part of a novel form of burial rite in Britain, the Beaker burial (Needham 2012: 3). Beaker burials from the 'pre-fission' phase (*c.* 2450-2250 cal BC) were relatively rare and tended to resemble examples from the Continent (Needham 2005: 209). The typical burial rite for 'pre-fission' Beaker burials consisted of a single crouched inhumation accompanied by objects from the 'primary package' of grave goods, which included Low-Carinated (LC) Beakers, copper daggers, lithic barbed-and-tanged arrowheads and stone wristguards (Needham 2005: 176). Perhaps one of the earliest example is Flat Grave 919 from Barrow Hills in Oxfordshire, dated to 2862-2232 cal BC (3990±80 BP, OxA-1875), which contained the remains of three non-adults (the skeletons of an infant and a young child, and cremated bones from a young child), accompanied by a LC Beaker with Maritime-Derived (MD) decoration (Barclay and Halpin 1999: 55-57). Another early radiocarbon-dated example is the richly-furnished 'Amesbury Archer' grave (Boscombe Down West 1) in Wiltshire which contained the skeleton of an adult male around 35-50 years old dated to 2471-2290 cal BC (3895±32 BP, OxA-13541) (Fitzpatrick 2002, Needham 2005: 185).

Three burial deposits date to the Chalcolithic period in Wales: Llantrithyd (Cardiff Archaeological Society 1977: 10) and Sutton 268’ (Fox 1943: 94) in Glamorgan, and Penderyn in Brecknockshire (Savory 1980: 138). These burials belong to the ‘pre-fission’ phase of Beaker burials based on grave good associations (section 3.3.2): LC Beakers with MD decoration at Penderyn (Savory 1980: 138) and Sutton 268’ (Fox 1943: Plate XXXIX), and a stone wristguard at Llantrithyd (Cardiff Archaeological Society 1977: 10) (Needham 2005: 205). Only one of these burials, Sutton 268’, was associated with a burial monument, a small 6.9 x 5.7m wide mound encircled by a circular ditch with two causeways (Fox 1943: 94). The limited number of Chalcolithic burials in Wales indicates that formal burials remained rare in this period, and that the majority of people were disposed of in ways which did not leave traces within the archaeological record (section 2.2.2). Furthermore, based on the burial data currently available, these early examples of Beaker burials are limited in their distribution to the south-east of Wales (southern Powys and Glamorgan).

7.3.2 Demographics and grave good associations in ‘pre-fission’ Beaker burials

Due to the limited number of burial deposits from this period, it is difficult to define the character of ‘pre-fission’ Beaker burials in Wales (section 5.6). The Llantrithyd and Sutton 268’ each contained a single inhumation burial, both of which represented adults (ID No. 9-10 in Appendix F). The Sutton 268’ inhumation was at the base of a large pit, orientated in a N-S alignment, and surrounded by a rectangular setting of stone blocks (Fox 1943: 94). The body had been placed in a crouched position on its left side with the head to the south. In addition to the LC Beaker, the Sutton 268’ inhumation burial was accompanied by seven flint barbed-and-tanged arrowheads and a chert scraper (Fox 1943: 94). This grave good assemblage is similar to the type of objects which often accompanied early Beaker burials from the Continent (Fowler 2013: 115). One ‘pre-fission’ Beaker burial in Wales included an exotic object: the stone wristguard from Llantrithyd made of nephrite, a type of stone found around the Alps (Burrow 2011: 149-150). The stone wristguard from Llantrithyd indicates evidence of contact or trade with the continent, and the rarity of such an item certainly suggests that it represented a prestige object.

7.3.3 'Pre-fission' Beaker burials: migration or diffusion?

Two theories have been put forward for the arrival of Beaker material culture and burial rites to the British Isles. The idea that the arrival of the 'Beaker Culture' in Britain was due to the migration of a distinctive race or culture, the 'Beaker Folk', has dominated 19th and early 20th century interpretations (Ashbee 1978: 133, Kendrick and Hawkes 1932: 99). Another explanation is that aspects of Beaker material culture were gradually adopted by communities through the diffusion of ideas from the Continent (Burgess 2001: 161, Fokkens 2012, Thomas 1999: 156). Beaker burials could represent the adaptation of an earlier tradition of single inhumation burials in the Middle Neolithic period (Gibson 2007, Thomas 1999: 151ff), although a hiatus in inhumation burials of more than 500 years separated the two burial traditions (Sheridan 2008). Sheridan (2012) argued that the diffusion theory is weakened by the fact that there is little evidence for contact with the Continent in the centuries before the arrival of Beaker material culture. In terms of the Welsh evidence, the fact that 'pre-fission' Beaker sites are located near the coast – the three Beaker burials in south-east Wales (section 7.3.1) and the domestic settlement at Newborough Warren in Anglesey (Clarke 1970: 57, Lynch 1991: 123-124) – certainly seems to indicate points of migration along major seaways.

The discovery through stable isotope analyses that some individuals from the Neolithic and Bronze Age in Europe were quite mobile have recently rekindled discussions on population migrations in prehistoric times (Evans *et al* 2006, Fitzpatrick 2002, Grupe *et al* 1997, Price *et al* 1998, Price *et al* 2004). The analysis of strontium and oxygen isotope ratios in more than 250 inhumations from the Late Neolithic to the Early Bronze Age period in Britain (and one from Ireland) as part of the Beaker People Project has been carried out to assess mobility levels (Jay and Richards 2007). The results suggest patterns of regional movements across the British Isles rather than continental migration from Europe (Jay *et al* 2012, Parker Pearson *et al* 2016). In the context of Beaker burials, especially in terms of the Early Bronze Age material, these results supports the concept of the 'Beaker package' – a set of ideas adopted from the outside by local communities – rather than the theory of mass population migration from Europe. The evidence in Wales therefore suggests that, although Beaker burial practices originated from the movement of people from the Continent, this burial tradition spread throughout Britain through diffusion in the Early Bronze Age period (Parker Pearson *et al* 2016).

7.3.4 Circular enclosures

The tradition of circular enclosures, first developed towards the end of the fourth millennium BC in Wales (section 7.1.2), carried on into the Chalcolithic period. At least one monument was constructed in this period in Wales, the *c.* 100m wide ditched enclosure at Walton Court, Powys, which dated to around the 26th-24th centuries BC (section 3.3.1; Jones 2010).

7.4 Early Bronze Age (*c.* 2200-1700 BC)

7.4.1 Monument types

The most common type of prehistoric monument is the round barrow/cairn (Burgess 2001: 304), for which more than 2900 examples have been recorded in Wales (section 3.4.1). The radiocarbon-based evidence suggests that burial mounds (round barrows and burial cairns) became the dominant type of funerary monument in the Early Bronze Age, with 23 excavated sites in Wales which have returned 22nd-17th century BC dates for their construction (section 3.4.1). Burial mounds were typically circular in plan, and varied between 3-35m in diameter (section 5.9.1). The majority of excavated burial mounds from this period were found to represent multi-phased structures in which the mounds were often enlarged and further burials deposited (section 5.9.1). These monuments most frequently contained multiple burials, between two to sixteen (section 5.7.1). Larger burial mounds, and multi-phased mounds, contained a greater number of burials than smaller and single-phased mounds (section 5.9.1).

One of the most interesting find from this study relates to the timeframe associated with Early Bronze Age mounds. In all but a few exceptions (Fan Foel: Hughes and Murphy 2013 and Steynton: Barber *et al* 2014), no clear differences in radiocarbon dates between different phases of activity at burial mounds were identified (section 3.4.1.3). These monuments were built, used for the deposition of burials and abandoned within a short timespan of about 100-

200 years. This suggests that remembrance played an important role in funerary practices within Early Bronze Age mortuary rites: the deceased were buried in monuments alongside known and remembered individuals. It is therefore not surprising that monuments were abandoned after one to two centuries as the memories associated with the initial primary burials would have been forgotten. This fits with the idea that they represented the cemeteries of a family or a small clan (Bradley 2007: 160, Garwood 1991, Petersen 1972). These monuments would have created conspicuous markers across the landscape which acted as powerful mnemonic reminders of ancestral links to the dead within these families or communities (section 2.1.1; Bradley 2007: 201, Brück 2004: 310).

Burial deposits in the Early Bronze Age period were also found associated with a variety of circular enclosures which include henges, timber circles and stone circles (section 5.7.1). This further undermines the dichotomy between 'funerary' and 'ritual' monuments in Table 7.1 as, for this period at least, burials took place in circular enclosures. Few radiocarbon dates are available in Wales for the construction of circular enclosures (section 3.4.3), except for two timber circles, Sarn-y-bryn-caled 1 and Pont-ar-daf in Powys, and the pit circles at Pantymenyn and Yr Allor in Carmarthenshire, which dated to between the 22nd-18th centuries BC (Gibson 1993a: 177, 1994: 150, 155, Kirk and Williams 2000: 265). No reliable radiocarbon determinations are available to date the constructions of the Llandygai A and Llandygai B henges in Gwynedd (section 3.4.3), although the dates obtained from the cremation burials suggest phases of activity at these sites between *c.* 2200-1800 BC (Lynch and Musson 2001: 47, 64). The cremation burials inside the stone circle at Druid's Circle (Griffiths 1960), Conwy, also date to the Early Bronze Age based on grave good associations (the Food Vessel Urn dates to a period between *c.* 2100-1740 BC: Brindley 2007: 328, Wilkin 2013: 40). Whereas practices in the Middle and Late Neolithic periods centred upon the incorporation of cremation deposits into the circular enclosures – deposited for example in the post-pit at Meusydd I or in the fill of the penannular ditch at Sarn-y-bryn-caled 2 (section 7.2.2) – cremation burials in the Early Bronze Age were deposited inside, and often positioned centrally, the enclosures. This therefore suggests a shift of focus from the monuments themselves in the Middle and Late Neolithic periods, to the individual burial deposits in the Early Bronze Age period.

7.4.2 Inhumation rites

The examination of how people treated bodies in the past can tell us much about their attitudes towards death (section 2.1). Choices were made in the types of monuments constructed, the ways the bodies were treated and manipulated, and in the types of objects deposited in the graves. Although every practice associated with the funerary process may represent deeply ritualised actions, archaeologists can only examine the final static burial record. In order to reconstruct the past belief systems which underlie the treatment of the dead, archaeologists aim to identify patterns within this record in terms of biological identity, body treatments and material culture (section 2.2).

Early Bronze Age deposits included both inhumation and cremation burials (section 5.7.1). The analysis of the burial record in terms of a simple inhumation/cremation dichotomy is problematic. The processes involved in both types of body treatments are much more complex in terms of the practices involved in the pre- and post-burial manipulation of the remains (section 2.1.2; Appleby 2013). However, the dichotomy between inhumation and cremation burials ultimately reflects a conflict between preserving and transforming the body (Rebay-Salisbury 2013). This difference reflects choices made in how to treat bodies linked to past beliefs in which social, political and even circumstantial factors played a role in the expression of mortuary rites (Rebay-Salisbury 2013). The analysis of the post-burial record – in terms of who was buried where and how the bodies were treated – provide a tool through which beliefs associated with death and the afterlife can be reconstructed.

At least 112 inhumation burials from this period have been recorded in Wales, the majority (74.8%) of which were associated with burial mounds (round barrows and burial cairns) (section 5.7.1.1). Six inhumations from burial mounds were associated with good quality radiocarbon dates (section 3.4.1.1) which spanned from the 22nd-17th centuries BC: Four Crosses 1 (3420±70 BP, CAR-666: Warrilow *et al* 1986: 56), Hendre (3480±80 BP, BM-2922: Brassil and

Gibson 1999: 96), Llanelwedd Rocks 2 (3680±35 BP, SUERC-24766; 3670±35 BP, SUERC-24769; 3670±40 BP, Beta-290090: Britnell 2013: 219), Pant-y-Butler 2 (3675±35 BP, SUERC-36628: Murphy and Murphy 2013), Tandderwen (inhumation 2) (3610±70 BP, CAR-1193: Brassil *et al* 1991: 72), Welsh St Donats 3 (burial C) (3470±100 BP, BM-1681R: Ehrenberg *et al* 1981: 814) and Ysgwennant (pit 1) (3423±82 BP, Birm-85: Day and Savory 1972: 28). Other types of monuments with possible inhumation burials include two stone circles (Hengwm S: Crawford 1920 and Ynys Hir: Dunning 1943) and a Middle Neolithic enclosure (Lower Luggy: Gibson 2006: 174-176) (section 5.7.1.1).

Inhumations were predominantly placed in well-built short-cists, or at the base of large grave pits, which were most often orientated, or roughly orientated, in a N-S alignment (76.8%: Table 5.7). No evidence was identified for the re-opening of cists or burial pits which contained multiple individuals (n=6, 11.1%), which indicates that the bodies had been deposited simultaneously within the burial features (section 5.7.3.1). Most inhumations were placed in a crouched position, with the body facing east or west, so the bodies faced sunrises or sunsets (section 5.7.3.1). The majority of Early Bronze Age inhumations in Britain were orientated E-W (Fowler 2013: 147, Shepherd 2012, Tuckwell 1975), although N-S alignments were also common (Shepherd 2012, Sofaer Derevenski 2002, Wilkin 2013: 177). There was not enough evidence to examine body positions in relation to biological sex (Table 5.11).

The central position of inhumation burials under burial mounds has often been seen as to reflect the special importance of the individual (Ashbee 1960: 174, Mortimer 1905: xviii, Wilson 1863: 62). A similar pattern was also recorded in Wales, where the majority (86.9%) of monuments contained a single inhumation burial (section 5.7.1.1), most commonly found in a primary (i.e. deposited before the mound was built) and central position in burial mounds (Table 5.5). This indicates that the primary focus at these monuments was placed on these burials. A deliberate selection of who was to be buried in this manner occurred based on the biological sex of the deceased, as adult males were over-represented in inhumation burials compared to adult females (ratio of 1:2.9 in favour of adult males) (section 5.7.4.1). A similar sex-based bias towards males in Early Bronze Age inhumation burials has also been recorded elsewhere in Britain (Harding and Healy 2007: 230, Mizoguchi 1993, Petersen 1972, Walsh 2013: 109). Non-adults were found to be under-represented within the sample of Welsh Early Bronze Age inhumations, with 18 (32.1%) non-adults represented compared to 38 (66.9%) adults. Non-adults were also under-represented in Early Bronze Age inhumation burials in England (Brothwell 1960, Fowler 2013: 80, Petersen 1972, Walsh 2013: 109). These differences in burial modes reflect the varied nature social identities based on age and gender within Bronze Age communities (section 2.2.2). The over-representation of adult males in inhumation graves compared to other social groups (non-adults and adult females) reveals differences in the expression of perceived social identity in which biological sex played an important role (Sofaer Derevenski 2002). Differences in social relations may have been reproduced through the treatment of bodies: adult males which played important roles within a particular group were buried in prominent (primary and central) positions within the mounds. However, this literal interpretation of the burial data is far too simplistic, as variations in burial modes reflect the multi-faceted nature of idealised identities within these communities rather than the actual social roles individuals played in life (see discussion on grave goods below).

Although the majority (73.2%) of burial deposits represented crouched inhumations, six (13.6%) were extended inhumations and five (12.2%) disarticulated inhumations (section 5.7.3.1). Whilst crouched and extended inhumations were predominantly found in a primary and central position in burials mounds, disarticulated inhumations were found in secondary and non-central positions, as for example at Crown Farm (Davies 1929a) and Ffridd y Garreg Wen (Williams 1921) in Flintshire, and Pant y Butler 2 in Carmarthenshire (Murphy and Murphy 2013). This therefore indicates that the most uncommon burials in terms of deposit types represented secondary insertions into the mounds. These could have been deliberately placed in peripheral positions in relation to earlier primary graves as a means to add specific memories to the monuments (Mizoguchi 1993). The burial deposit from Hendre, Flintshire, represents the most unusual Early Bronze Age inhumation burial in terms of burial context (shallow pit/scoop in a natural mound), burial type (disarticulated inhumation) and number of individuals represented (MNI=4) (Brassil and Gibson 1999). Although the majority of Early Bronze Age skeletons were incomplete, no evidence could be found for the removal of bones in inhumation graves (section 5.7.3.1). Furthermore, no skeleton was associated with additional skeletal elements (section 5.7.3.1). There is therefore only limited evidence for 'unusual' Early Bronze Age inhumation rites (section 2.1.2) in Wales, except for disarticulated inhumations. However, this could in part be due to the generally poor level of bone preservation, as the recent discovery of at least two partially articulated skeletons in Glamorgan (Reames, pers comm) suggests that practices which involved the deliberate manipulation of bones prior to or after the burial were more common than previously envisioned.

More than half (56.1%) of Early Bronze Age inhumation burials were accompanied by grave goods (section 5.7.5.1). A greater proportion of adults (64.8%) than non-adults (36.9%) were associated with objects. These patterns furher reflect differences in the expression of age-based social identities in Early Bronze Age groups (section 2.2.3). Children, perhaps due to the fact they had not reach the adulthood status, were less commonly buried with objects. 45 (36.5%) inhumations were associated with a Beaker, the most common type of which was the Long-Necked Beaker (Figure 5.12). Whilst Long-Necked Beakers were predominantly associated with adults, Short-Necked Beakers were more commonly associated with non-adults (Table 5.17). Another type of pottery vessel found in inhumation burials is the Food Vessel, although only two examples have been identified in Wales, a Bowl Food Vessel from the Candleston Castle cist (Ward 1919b) and a Food Vessel Urn at Linney Burrows (Gordon-Williams 1926). Pottery vessels associated with Beaker burials have often been thought to have contained liquids or food as offerings for the dead in the afterlife (Brodie 1997). The most common placements of pottery vessels associated with Early Bronze Age inhumations in Wales – near the head or upper body of the deceased (Table 5.16) – certainly seem to support the idea that these vessels may have been symbolically associated with drinking or eating in the afterlife. However, whilst several residue analyses have shown that some European Beakers had been used in the preparation and/or storage of food and liquids (such as mead, beer and milk) (Guerra-Doce 2006, Isaksson and Hallgren 2012), other pottery vessels may have been used for other activities (such as smelting copper), or could have been used as simple funerary vessels made especially for the burial (Guerra-Doce 2006). It is also a possibility that these pots represented symbolic objects with meanings beyond their simple functional uses (section 2.2.3).

Other common types of artefacts associated with inhumation burials are barbed-and-tanged flint arrowheads, bronze and flint knives, flint flakes, bronze awls, bronze daggers, jet and lignite buttons, and beads (amber, bone and stone) (Table 5.14). Six types of artefacts were only found associated with adult inhumations: bronze and flint knives, bronze awls, jet and lignite buttons and necklaces, bronze daggers and flint flakes (Figure 5.13). This again indicates that objects were used to reflect social age differences within these prehistoric communities. Artefacts which may have been regarded as functional tools (knifes, awls, daggers and flakes) and jewellery (buttons and necklaces) were mostly reserved for individuals which had reached adulthood (section 2.2.3). No significant differences were identified between the proportions of males and females associated with grave goods (Table 5.17). However, there were several associations between sex and artefact types, as bronze daggers, bronze knives and flint knives were only found associated with males and bronze awls only with females. Flint flakes were also found to be predominantly associated with females (Figure 5.14). Similar gender-based associations in grave goods have also been recorded elsewhere in Britain, with males more commonly accompanied by daggers, axes and knives, and females by bronze awls and flint flakes (Clarke 1970: 264-265, Sofaer Derevenski 2002, Walsh 2013: 120). These differences within grave goods represent idealised constructions of engendered identities within Early Bronze Age societies and as such symbolise the ideological representation of gender within mortuary rites (the habitus of mortuary rites).

Grave good associations in Early Bronze Age inhumation burials are often used to reconstruct past social identities and social organisations (section 2.2.3). The choice of objects to be placed in the grave as well as their relationship with the body reflects deliberate choices by the mourners to represent the dead.

Variation in the articulation of grave goods, in association with the body, represents a system of objects that provides an underlying grammar perhaps instantly readable to mourners and observers of the funerary rites. Two broad types of objects can be identified within the corpus of Early Bronze Age inhumations: tools, weapons, and functional objects versus items of personal adornment. These objects may well have represented the personal items of the deceased, or items made especially for the burial (Bradley 2007: 160).

The analysis of grave good placement within the grave suggests that, whilst items of decorations (e.g. bone pins to hold clothing or hair and jewellery) are placed on the body, functional items (e.g. flint and bronze knifes and arrowheads) are more frequently placed near the hands of the deceased (Harding and Healy 2007: 243). It is unfortunate that, due to the poor recording of excavations by antiquarians and often poor levels of bone survival, the burial record for Welsh Early Bronze Age inhumations is too limited to examine the spatial relationships of objects within graves. Despite this, the gender-based grave good associations identified in this study and elsewhere in Britain (see above) suggest that males and females may have played specialised roles within Early Bronze Age community, as males were more often associated with hunting tools and weapons, and females with leatherworking tools (bronze awls and flint flakes) (Clarke 1970, Brodie 1997). However, the identification of gender roles through the presence or absence of grave goods is problematic (section 2.2.1). Indeed material culture and materials (e.g. clay or stone) may be considered to be living entities in their own right and thus be assigned gender distinctions independent of people. However, when close relationships between biological sex and material culture can be identified, as found in Wales, this surely tells us something about Early Bronze Age gender relations in death. The key point here is that grave goods are likely to represent an idealised notion of maleness and femaleness, and as such mortuary rites are a reflection of idealised engendered identities within society rather than direct reflections of gendered roles within life. Equally it is also important to remember that in more than 40% of inhumations in Wales (section 5.7.5.1) no objects were placed in the graves, which would suggest that either grave goods were not always a prerequisite of Early Bronze Age funerary practices in this region, or that some objects were made of organic materials which did not survive in the burial environment (section 2.2.3).

7.4.3 Cremation rites

The most common type of Early Bronze Age funerary deposit is the cremation burial: 22.7% of recorded bone deposits for this period in Wales represented inhumations versus 76.3% cremation deposits (section 5.7). At least 399 cremation deposits have been excavated in Wales, the majority (90.5%) of which came from burial mounds (section 5.7.1.2). Other types of monuments with cremation deposits include cremation cemeteries, circular enclosures (henges, timber circles and stone circles) and a standing stone (Maen Llwyd: Hemp 1932). Of the sample of excavated cremation deposits, 68 are associated with good quality radiocarbon dates, the majority of which span from the 23rd-18th centuries BC (section 3.4.1.2).

The burning of a body represents one of several possible choices made in how to treat bodies after death (section 2.1). It has been argued that the difference in burial modes between inhumation and cremation may have been dictated by the social identity of the deceased (section 2.2.2). The mortuary processes involved with cremation burials may have been complex and varied, from pre-cremation body treatments (e.g. mummification), to the post-cremation selection of bones (Appleby 2013, Brück 2009). In terms of the Welsh material, Early Bronze Age cremation rites involved the cremation of complete and fleshed bodies (section 6.3.1). The majority (89.1%) of cremation deposits displayed white colours (section 6.3.2), which suggests that most bodies had been well cremated, with minimum pyre temperatures of between *c.* 700-800°C (Wahl 2008: 149-150). However, a small proportion (10.9%) of deposits displayed black, blue or grey colours, which indicate that the cremation processes had been less efficient, with pyre temperatures of between *c.* 400-700°C (Wahl 2008: 149). These temperatures are sufficient for the combustion of flesh and other soft tissues, but not for the complete oxidisation of the bones (Mayne Correia 1997, Walker *et al* 2008). Variability in combustion levels could be due to a number of factors, such as adverse weather conditions, insufficient amount of wood used, collapse of the pyre, or that the cremation process was too short

(McKinley and Bond 2005, Walker *et al* 2008). In some deposits (e.g. Fan 22, Llanymynech 1135 and Marlborough Grange CI) the cremated bones from different individuals had reached different combustion grades (section 6.3.2). This could be due to the different positions of the bodies on the pyre where different temperatures are reached (McKinley 2008). Another possible explanation is that the cremated bones of an individual were curated until another individual was cremated, and the bones then deposited together in the same burial context (section 6.3.2).

Early Bronze Age cremation deposits in Wales varied between 0.3-8955.4g in weight, with an average of 976.1g for undisturbed deposits (section 6.3.3). Although the average cremation weight is below the expected range of weights for modern cremations (876-5379g: Bass and Jantz 2002, McKinley 1993, Murad 1998, Warren and Maples 1997), it is within the range of weights recovered for burials from archaeological contexts (57-2200g: McKinley 1997). The majority (80.7%) of Early Bronze Age cremation deposits in northern England also weighed less than 1000g (Walsh 2013: 178). This therefore suggests that Early Bronze Age cremation rites rarely involved the complete collection of cremated bones from the pyre and/or deposition of the bones collected within the burial context. However, it is highly probable that taphonomic factors have played a role in the destruction of some of the cremated bones, as cremation deposits in urns or cists (better protected from taphonomic processes) were on average slightly larger (1076.1g and 1375.0g respectively) than unurned cremation deposits and cremation deposits from pits (914.7g and 986.6g respectively) (Table 6.8). As a greater proportion of cremation deposits contained charcoal (31.8% of deposits with charcoal versus 5.8% without charcoal: section 5.7.3.2), Early Bronze Age cremation rites in Wales most commonly involved the collection and deposition of both cremated human bones and pyre debris within the burial contexts.

There is no evidence that Early Bronze Age cremation rites involved the deliberate fragmentation of cremated bones, although the identification of such a practice within the mortuary record is difficult (section 6.3.4). Although Early Bronze Age cremation deposits were found to be more fragmented than the sample of *c.* 4000 multi-period sites examined by McKinley (1994a), variability in fragmentation rates was most likely to be due to a variety of post-depositional taphonomic factors within individual burial environments such as soil acidity and/or presence of water and plant roots. Several factors had an impact on the fragmentation levels of Early and Middle Bronze Age cremation deposits in Wales, which include burial context (cremation deposits from cists were less fragmented than from pits), burial type (urned cremation deposits were less fragmented than unurned cremation deposits) and age (cremated non-adults were more fragmented than cremated adults) (Tables 6.10-6.11).

The most common type of burial feature for cremation burials were pits (section 5.7.2.2). No obvious patterns could be identified in the orientation of burial features, the most common of which were NE-SW, N-S and NW-SE (Table 5.8). Patterns within the burial data suggest that a greater proportion of cremation burials were deposited before the mound was constructed, and that these deposits tended to be located centrally within the mounds (Table 5.6). On the other hand, secondary burials, inserted into the mounds after their construction, tended to be located in non-central positions. This again suggests that memory played a key role in mortuary rites (section 2.1.1). Secondary cremation burials were deposited in the periphery of mounds in relation to earlier primary and central graves. If the location and identity of individuals from primary graves were remembered – as suggested by the narrow timespans associated with the construction and use of burial monuments (section 3.4.3.1) – than the deposition of secondary burials acted as a means to add specific memories to the burial monuments (section 2.1.1). Such a practice may have reflected the desire to recreate social relationships between the deceased and to reproduce past social structures (Mizoguchi 1993).

A key feature of Early Bronze Age cremation rites is the inclusion of multiple individuals within the same burial deposit: 26.6% of cremation deposits contained multiple individuals versus 11.1% of inhumations (section 5.7.4). Although a lower proportion (16.4%) of Early Bronze Age cremation deposits from northern England also contained multiple individuals, almost all of which were from Cumbria (Walsh 2013: 207), it is much higher than the *c.* 5% of burials with multiple individuals recorded in the sample of *c.* 4000 multi-period sites examined by McKinley (1997: 130). The inclusion of multiple individuals within the same burial represents a major change in funerary practices in the Early Bronze Age period, as the majority of funerary deposits in Wales from the Middle Neolithic to the Chalcolithic periods contained a single individual, with the notable exception of cremation burials from Anglesey (section 5.9.4).

The osteological analysis of cremation deposits has revealed a very interesting pattern in Early Bronze Age cremation burial practices: a greater proportion of non-adults than adults were accompanied by at least another individual (Table 5.13). A similar pattern was also identified in Early Bronze Age cremation burials from northern England (Walsh 2013: 182). This therefore suggests that children were more commonly buried with at least another person, perhaps a family or community member. This could reflect a desire to insure that the most vulnerable individuals are accompanied and protected by loved ones in the afterlife. However, as suggested by the Monkton Up multiple inhumation burial in which some individuals were not related (section 2.2.2; Green 2000: 78-79), it should not always be assumed that relational identities in the past were predominantly defined in terms of familial links. Furthermore, it is possible that the proportion of burials with mixed-age individuals is over-represented as it is easier to recognise multiple individuals based on age-related skeletal differences compared to individuals of a similar age which can only be identified based on the duplication of skeletal elements.

Both non-adults (39.7% non-adults versus 60.3% adults) and adult females (ratio of 1:1.1 in favour of adult females) were better represented in cremation deposits compared to inhumations (32.1% non-adults versus 66.9% adults and sex ratio of 1:2.9 in favour of adult males) (Tables 5.10 and 5.12). This would suggest that, unlike inhumation burials in which adult males were more frequently represented, no selection of individuals based on age or sex occurred in cremation deposits. Cremation practices therefore did not represent a medium for the expression of differences in social identities in reference to biological age or sex (section 2.2). A slightly higher proportion of non-adults were represented in Early Bronze Age cremation deposits in Wales compared to England, where between *c.* 29-34% of individuals from cremation deposits were non-adults and *c.* 66-71% adults (Petersen 1972, Walsh 2013: 124). No obvious differences in sex ratios were also recorded elsewhere in Britain (Petersen 1972), except in the samples examined by Brück (2009) and Walsh (2013: 123) in which a gender bias towards females in cremation burials was identified. However, the patterns identified by Brück (2009) proved not to be statistically significant (Hall 2009). This indicates that, unlike inhumation burials where males were over-represented over other social groups, perceived differences in social roles were not expressed in cremation burials. All members of a family or group were treated similarly in death (cremation of bodies). Early Bronze Age cremation rites reflect the fluidity of social dynamics, as differences in engendered identities were not perceived as significant factors in the reproduction of mortuary rites.

A small proportion (9.0%) of Early Bronze Age cremation deposits represented token deposits (section 5.7.3.2). Token deposits came from a variety of contexts, which included inside stoneholes (Bedd Branwen: Lynch 1971), in association with inhumation burials (e.g. Candleston Castle: Ward 1919b, Groeswen: Savory 1950 and Ystradfellte: Holloway 1965), in pits in cremation cemeteries (e.g. Blaen-y-cae: Smith 2006) and pit circles (e.g. Yr Allor: Kirk and Williams 2000), inside pits with *in situ* burning (Carneddau I pit 21-23: Gibson 1993b), and inside pottery vessels in burial mounds and ring cairns (e.g. Bedd Branwen E, J and M: Lynch 1971, Carneddau I cist 3 and pit 25: Gibson 1993b and Moel Goedog I F8 and F10: Lynch 1984b). Brück (2009) suggested that the circulation of small quantities of cremated bones from adult females in the Early Bronze Age period could have been used to re-inforce inter-group relationships (section 2.1.2). The bone fragments, which represented strong metaphors of known individuals, could have been exchanged in order to reproduce social relationships (Brück 2009, Fowler 2015). Although not enough demographic data are available from the Welsh material to corroborate this (none of the adults in token cremation deposits could be sexed), the idea that token cremation deposits were moved around is certainly a possibility. Burial 3 at Trelystan I had been disturbed shortly after the burial had been deposited (Britnell 1982: 153), probably in order to collect cremated bones. The analysis of soil attached to the cremated bones from Moel Goedog I showed that the remains had been interred elsewhere before their final deposition (Lynch 1984b: 21).

Around two-thirds (63.1%) of cremation deposits were accompanied by artefacts (section 5.7.5.2), which compares to the proportion of burials with grave goods recorded in northern England (63.2%: Walsh 2013: 123). Pottery vessels were the most frequent type of artefact to accompany cremation deposits, the majority of which were Collared Urns, Food Vessel Urns and Pygmy Cups (Table 5.18). The cremated bones were most frequently placed inside the pottery vessels (188 of the 213 cremation deposits associated with ceramic vessels), although in a smaller proportion of cases (13.4%) the vessel had been placed beside the cremation burial (section 5.7.5.2). Although pottery vessels may have represented practical items to contain the cremated bones of the dead, the act of containing a body within an urn may have been imbued with significance (section 2.1.2). The cremation process transforms a single, complete and recognisable individual into several broken fragments of bones; the pottery vessel could have been used to replicate or replace the relationship between the body and its objects (Sørensen and Rebay 2008). A similar practice may have taken place with bags made of organic materials or wooden boxes (21 Early Bronze Age cremation deposits in Wales had probably been held in organic containers: section 5.7.3.2).

A significantly greater proportion of non-adults (76.4%) were accompanied by grave goods than adults (64.3%) in Early Bronze Age cremation burials (Table 5.20). This differs from patterns recorded in inhumation burials where adults were most frequently buried with objects (section 7.4.2). Furthermore, several age-based patterns in grave good associations were also identified – non-adults were more commonly accompanied by beads, cups (including Pygmy Cups), Food Vessels, knives and flint cores, and adults with bronze artefacts (blades, daggers, razors and rivets) – although only the Food Vessel association was statistically significant (Figure 5.15). These patterns may be a reflection of the expression of differences in social identities between age groups (section 2.2.1). However, it is probable that the age-based grave good associations recorded in this study were affected by the small size of the sample as no similar patterns could be identified within the wider corpus of Early Bronze Age cremation deposits in Britain. For example, neither Food Vessels (Wilkin 2013: 234) nor Pygmy Cups (Gibson 2004) were found to be more commonly associated with non-adults.

Several patterns have also been identified between sex and grave good associations in Early Bronze Age cremation deposits (Table 5.20). However, none of these associations were statistically significant, probably due to the small size of the sample. Six types of objects were only found associated with adult males: arrowshaft straighteners, axes, hones, pendants, points, razors and scrapers. Males were also more frequently accompanied by arrowheads, daggers, knives and pins than females (Figure 5.16). Bronze awls and rivets were the only types of artefacts only found associated with females. Pygmy Cups, flint/stone flakes and Food Vessels were also more frequently with associated with females (Figure 5.16). This suggests that, as with inhumation burials (section 7.4.2), objects may have been used as a means to display ideological differences in biological or social identities within cremation rites (section 2.2.3). However, the meanings behind these grave good associations are difficult to ascertain, as both males and females were associated with both functional and decorative objects. It may be that these objects had symbolic meanings beyond their simple practical functions (section 2.2.3).

The objects placed in cremation burials may have represented personal items of the deceased, objects selected by mourners to represent the dead person, or items of personal decoration (section 2.2.3). Some of these items, such as, for example, individual beads from a necklace, may have represented heirlooms placed in the burial as a means to emphasise family relations (Bukach 2015, Woodward 2002). The fact that several of the objects were burnt (Appendix F) indicates that some of them had been cremated with the deceased on the cremation pyre. At least 22.3% of burials also contained burnt animal bones which suggest that food offerings may have played a role in Early Bronze Age cremation practices (section 6.5.5). Although 33% of Early Bronze Age cremation burials were not accompanied by any objects, the recent discovery of the well-preserved cremation burial from Whitehorse Hill cist in Dartmoor – accompanied by a textile and animal skin object, a wristband of woven fabric, a lime bast basket, an animal pelt, beads, wooden studs, flints and a copper-alloy pin (Jones 2016a) – suggests that a significantly larger number of burials may have been associated with organic objects which have not been preserved.

7.5 Middle Bronze Age (*c.* 1700-1200 BC)

7.5.1 Monument types

The Middle Bronze Age period is associated with a notable decrease in the number of funerary and ritual monuments constructed compared to the Early Bronze Age period (section 5.9.1). This suggests that major changes in traditions occurred in the 18th century BC in which the construction of new funerary and ritual monuments became less popular. Funerary practices in this period also stand in stark contrast to practices in the Early Bronze Age period, as inhumation burials disappeared from the mortuary record (section 5.8.3), cremation deposits with multiple individuals became less common (section 5.8.4), and the inclusion of grave goods with the burials became less frequent (section 5.8.5).

The tradition of multi-phased burial mounds became less common in the 18th century BC (Garwood 2007: 37). Burial mounds from the start of the Middle Bronze Age period were smaller in size and tended to contain a single central burial, sometimes with secondary or satellite burials (Garwood 2007: 37). A similar pattern was also recorded in Wales, where burial mounds after *c.* 1700 BC were smaller (average diameter 13.5m) than in the Early Bronze Age (average diameter 16.0m) (section 5.9.1). The majority (74.0%) of burial mounds also contained a single burial deposit, although these burials were not always located centrally under the mound (Table 5.23). Examples include the inverted 'Late' Collared Urn with the cremated bones of a young child in a pit cut into the bedrock covered by a small 5m wide round cairn after 1862-1446 cal BC (3330±70 BP, CAR-1038) at Lan Fawr III in Powys (ID No. 231 in Appendix F; Britnell 1988). At Six Wells 271', Glamorgan, the cremated bones of an older adult ?male in a Trevisker Ware Urn, dated to *c.* 1600-1415 BC (3215±35 BP, GrA-27617; 3210±40 BP, GrA-27623), had been placed upright inside a cist and covered by a large *c.* 27m wide turf mound (ID No. 232 in Appendix F; Fox 1959: 156-177, Quinnell 2012: 155).

Other Middle Bronze Age burial deposits in Wales represented secondary insertions into the mounds. Examples include the five secondary cremation burials from Kilpaison Burrows, Glamorgan, four of which in 'Middle' or 'Late' Collared Urns (Fox 1926a), radiocarbon-dated to between *c.* 1750-1515 BC (3370±35BP, GrA-27619; 3325±35BP, GrA-27622: Brindley 2007: 366-367), and the three to four cremation burials, two of which in Bucket Urns, from Cornell Pen y Bedd, Denbighshire (Davies 1949: 439-441). At Welsh St Donats 3, a Barrel Urn with the cremated bones of a young child and an adult were placed in a 'satellite' pit (burial 6) outside the Early Bronze Age round barrow (ID No. 233 in Appendix F; Ehrenberg *et al* 1981: 820). These burials may have been placed deliberately in secondary positions or at the periphery of mounds in order to recreate relationships between deceased individuals (section 2.1.1).

7.5.2 Cremation pyres

Several burial mounds built after the mid-17th century BC were found to cover the remains of *in situ* pyres (Garwood 2007: 37). Although several Early Bronze Age round barrows were built over the probable remains of cremation pyres (Brenig 40, Brenig 42, Letterston II, Trelystan I: section 5.6.2.2), there is no evidence that this type of practice carried on into the Middle Bronze Age period in Wales. The only possible Middle Bronze Age cremation pyres are from the Pennant Melangell Church in Powys, although these do not appear to have been associated with a mound (Britnell 1994: 53-54, 68). The Pennant Melangell Church site may have been re-used on multiple occasions for the cremation of up to nine individuals (four non-adults and five adults) between the 17th-13th centuries BC (3180±60 BP, CAR-1309; 3140±70 BP, CAR-1249; McKinley 1994b: 100-101).

7.5.3 Circular enclosures

Circular enclosures represent the most persistent form of prehistoric monument in Britain, with dates which span from between 3000-1200 BC for henges (Gibson 2012a: 14, Harding 2003: 14), timber circles (Gibson 2005: 62) and stone circles (Burl 2000: 376-377). Although several circular enclosures in Wales have securely been dated to the Late Neolithic, Chalcolithic and Early Bronze Age periods (sections 7.2.2, 7.3.4 and 7.4.1), only one such enclosure has been dated to the Middle Bronze Age period: the small *c.* 4m wide stone circle at Penmaenmawr 280 in Conwy (section 3.5.4). Cremation burials had been placed inside two small cists outside the stone circle (Griffiths unpublished), which dates to the second half of the second millennium BC (1659-935 cal BC, 3080±145 BP, NPL-12: Burrow and Williams 2008). This therefore suggests that the tradition of depositing cremation burials in association with circular enclosures carried on into the Middle Bronze Age period in Wales, although it was less popular than in previous periods (section 5.9.1).

7.5.4 Cremation rites

Cremation deposits represent the only type of human bone deposit in the Middle Bronze Age period (section 5.8.3). No inhumation burial in Wales has been radiocarbon-dated to later than the 18th century BC (section 3.4.1.1). The analysis of pyre technology data from the 14 deposits examined in this study (Appendix G) suggests that Middle Bronze Age cremation rites involved the cremation of complete fleshed bodies (section 6.4). The majority of bodies were well-cremated, although in a smaller proportion of cases (21.4%) the cremation process had been less efficient, with pyre temperatures of between *c.* 550-700°C (section 6.4.2). Cremation deposits were on average significantly smaller in the Middle Bronze Age (390.7g) than in the Early Bronze Age (976.1g) (Table 6.16). This therefore suggest that mortuary rites therefore did not involve the complete collection of cremated bones from the pyre, or that practices involved the manipulation of human remains outside the burial context (section 2.1.2 and below).

The Middle Bronze Age period is associated with a return to single individual burials, as 91.4% of burial deposits from this period contained one individual (section 5.8.4). Due to the small number of bone deposits from this period in Wales, little can be said about patterns within the demographic data, except that both non-adults and adults were represented (33.3% non-adults and 64.7%

adults: section 5.8.4). Burial practices in the Middle Bronze Age did not commonly include the deposition of grave goods (section 5.8.5). Only 33.0% of burials were associated with objects, the majority of which were limited to a single pottery vessel (Collared Urn, Barrel Urn, Bucket Urn and Trevisker Ware: Table 5.25). The only other type of artefact associated with Middle Bronze Age cremation deposits were flint flakes, which were found in two (4.0%) deposits (Brenig 14: Lynch and Kelly 1993 and Bridgend: Lewis 1966). This suggests that the Middle Bronze Age period is associated with major changes in the relationship between the dead and the mourners. The practice of containing the dead within pottery vessels, perhaps as a way to reconstruct or 'house' fragmented bodies (Sørensen and Rebay 2008), is declining. The inclusion of personal or decorative items with the deceased also became less common.

A tradition which became more common in the Middle Bronze Age period is the deposition of token amount of cremated bones under or near standing stones (section 5.8.1). Examples of this type of practice have been identified at Aber Camddwr II (Marshall and Murphy 1991) and Plas Gogerddan (Murphy 1992) in Ceredigion, Bridgend in Glamorgan (Lewis 1966), and Longstone Field (Williams 1989) and Rhos y Clegyrn (Lewis 1974) in Pembrokeshire. Radiocarbon dates associated with standing stones in Wales span from between *c.* 1750-1000 cal BC in Wales (section 3.5.3). Token amounts of cremated bones may have acted as symbolic mnemonic foundation deposits (sections 2.1.2 and 7.1.3). Other examples of Middle Bronze Age sites associated with human bone deposits are the cremation cemeteries at Coity 1 and 2 in Glamorgan (Richmond 2009), which respectively contained four and two cremation burials in pits, and the two cremation pits at Llanystumdwy in Gwynedd (Kenney *et al* 2013). Both the Coity 1 (Richmond 2009: 11) and Llanystumdwy (Kenney *et al* 2013: 23) cremation deposits returned *c.* 1700-1500 cal BC dates (section 3.5.2).

The Middle Bronze Age therefore represents a period of major changes in funerary practices (section 2.1.1). Funerary mounds, which may have served as conspicuous memorials for families or groups, were no longer constructed (Bradley 2007: 201). Although some individuals were buried in these mounds, the majority of people were disposed of in ways which are not archaeologically visible (section 2.2.2). Objects were no longer used as a means to express relational differences in social identities. It has been argued that the temporality of mortuary rites also shifted from practices which involved in some cases a long-term engagement with the human remains in the Early Bronze Age (Appleby 2013: 93). However, although the final types of deposits which entered the burial record are limited to cremation deposits, it is possible that bodies were manipulated in a variety of ways (e.g. smoked, mummified, dismembered, etc.) prior to burning (section 2.1; Weiss-Krejci 2011: 69). The evidence certainly suggests that a variety of post-cremation rites existed within these past communities.

The deposition of token amounts of cremated bones in non-funerary monuments became a common type of practice from the second half of the second millennium BC onwards in Wales (sections 5.9.1 and 5.9.3). A similar pattern has also been recorded elsewhere in Britain and Ireland in the Middle and Late Bronze Age periods, where formal burials in funerary monuments all but disappeared from the burial record, to be replaced by the deposition of token cremation deposits in non-funerary contexts such as domestic sites, in small pits not associated with any monumental structures, or in stoneholes (Brück 1995, Cooney forthcoming). These shifts could be seen as a reflection of important changes in subsistence strategies within Bronze Age communities, which had in turn major influences on the relationship people had with their landscape (section 2.1.1; Appleby 2013: 93, Brück 2000).

Chapter 8: Conclusion

This study aimed to examine the character of Middle Neolithic to Middle Bronze Age (MN-MBA) (3600-1200 BC) funerary and ritual practices in Wales. In order to achieve this, several aspects of the funerary and ritual record were examined. This includes a study of the chronology and distribution of prehistoric monuments (Chapter 3); the osteological analysis of 257 MN-MBA human bone deposits in museums, Record Offices, university and archaeological Trusts collections in England and Wales (section 5.2); the analysis of contextual and osteological data from a comprehensive database of excavated funerary and ritual monuments (Chapter 5); and the analysis of pyre technology and cremation ritual data (Chapter 6).

8.1 Summary of research results

In this study, 257 MN-MBA human bone deposits (31 inhumations and 226 cremations) from Wales were examined osteologically by the author. The purpose of the analysis was to provide a more accurate and detailed record – in terms of demographic data (minimum number of individuals represented in each deposit as well as their age and sex) and pyre technology data for cremation deposits – of the nature of funerary and ritual deposits for the periods examined. This data was then included in a wider analysis of contextual data (Chapter 5) within the chronological framework developed in Chapter 3 in order to examine the research questions outlined in section 1.2.

The first research question focused on the identification of the key characteristics of MN-MBA funerary and ritual practices in Wales in terms of monument types, burial types, demographics and grave good associations. One type of burial rite in the Middle Neolithic (*c.* 3600-2900 BC) was the pit grave, although few examples have been identified in Wales (section 3.1.1). These sites represented relatively inconspicuous burial monuments, as no permanent visible structures covered these burials (section 5.4.1). Middle Neolithic burials typically contained one individual, more often an adult, which were more commonly cremated than inhumed (sections 5.4.3-5.4.4). This period also saw the development of circular enclosures, such as stone arcs and timber circles, some of which were associated with ritual practices which involved the deposition of token amounts of cremated bones, as for example at the Bryn Celli Ddu stone arc (section 7.1.2). Formal burials disappeared from the mortuary record in the Late Neolithic (*c.* 2900-2400 BC), except at the two passage graves in Anglesey where inhumation and cremation burials were deposited on the floor of the passage and chamber(s) (section 5.5). Practices in this period were predominantly focused on rituality, which involved the construction of new circular enclosures (henges, ditched enclosures and stone circles) (section 3.2), some of which contained token deposits of cremated human bones (section 5.5), and of practices linked to the structured deposition of Grooved Ware pottery and flints in pits (section 7.2.2). The tradition of inhumation burials re-appeared in the Chalcolithic period (*c.* 2500-2200 BC) with the arrival of the 'pre-fission' Beaker burial (section 3.3.2). However, the small number of examples identified within the mortuary record would suggest that formal burials still remained relatively uncommon for this period. Funerary practices most frequently involved the deposition of a single crouched inhumation accompanied by multiple artefacts, which included a Beaker pot, flint projectiles and/or exotic objects (section 5.6).

The Early Bronze Age (*c.* 2200-1700 BC) is associated with a major increase in the number of funerary deposits and associated funerary monuments, most frequently represented by burial mounds (section 3.4.1). Burial rites for this period more commonly involved the cremation rather than inhumation of the dead (section 5.7), most of which were deposited in mounds which probably contained the burials of other family or community members (section 7.4.1). The only clear pattern within demographic data identified in this study were from the sample of Early Bronze Age deposits, which suggested that inhumation burials were predominantly reserved for adults males (section 5.7.4.1), whilst non-adults were more commonly cremated (section 5.7.4.2) and deposited with at least another individual, usually an adult (section 5.7.4.2). Early Bronze Age funerary deposits were often associated with grave goods, from simple functional objects (e.g. flint/stone flakes, knives, scrapers and pottery vessels) to more elaborate objects (e.g. beads, gold cape, bronze axes, etc.) (section 5.7.5). Ritual practices in this period represented a continuation of Late

Neolithic practices, which included the construction of circular enclosures (henges, pit circles, timber circles and stone circles) (section 3.4.3) and deposition of token amounts of cremated human bones within a variety of structures (section 7.4.3).

A significant decline in the number of formal burials and funerary monuments occurred from around the mid-18th century BC onwards (sections 3.5 and 5.8.1). The only burial rite recorded for the Middle Bronze Age period (*c.* 1700-1200 BC) is the cremation burial, which typically contained a single individual (sections 5.8.3-5.8.4). The inclusion of grave goods also became less common and was usually restricted to mundane artefacts such as pottery vessels and flint flakes (section 5.8.5). Ritual circular enclosures were still constructed in this period, albeit in lesser numbers than previously (section 3.5.4). Practices shifted towards the deposition of token amounts of cremated bones in inconspicuous pits, some of which were associated with standing stones (section 7.5.4).

The second and third research questions aimed to identify patterns between demographic data and grave good associations. No clear patterns were identified for the Middle Neolithic (section 5.4.5), Late Neolithic (5.5.5), Chalcolithic (5.6.5) and Middle Bronze Age (5.8.5) periods, possibly due to the small sample sizes. Patterns in grave good associations were recorded for the Early Bronze Age period, although few of these associations were statistically significant (section 5.7.5). This includes LN Beakers with adults and SN Beakers with non-adults, bronze daggers with males, and bronze awls and flint flakes with females in inhumation burials (section 5.7.5.1). In cremation deposits, non-adults were more frequently associated with artefacts than adults, especially with beads, cups (which include Pygmy Cups), Food Vessels and knives, whilst several bronze objects (blades, daggers, razors and rivets) were more commonly deposited with adults (section 5.7.5.2). There were, however, no clear patterns in gender-based grave good associations in cremation deposits.

The fourth and fifth questions concerned the identification of periods when major changes in funerary and ritual practices occurred between 3600-1200

BC, and a discussion on the possible significance of these changes. The first major development took place in the middle of the fourth millennium BC with the single pit grave burial (section 3.1). This suggests that an important shift in funerary rites occurred at that time from the earlier communal or ancestral rites in chambered tombs to the commemoration of a single individual. The fact that adults were more commonly represented in these deposits compared to non-adults, some of which also contained elaborate grave good assemblages, could reflect the higher status or special significance of these individuals. The restricted distribution of these burials to northern Powys and north-west Wales (Figure 3.1) suggests cultural links in funerary rites with England where a number of MN single pit graves have also been uncovered (section 7.1.1). The next major change took place at the start of the third millennium BC, when formal funerary rites were replaced by ritual practices associated with the construction of circular enclosures. This could reflect a shift in the cultural or social values of Late Neolithic communities towards the performance of ritualistic activities, some of which involved the deposition of token cremation deposits in circular enclosures. These enclosures may have represented significant locales within the landscape used periodically for festivals or rituals associated with astronomical events (section 7.2.2). The next major development came with the re-introduction of single inhumation burials with the 'pre-fission' Beaker burial in the Chalcolithic period (*c.* 2500-2200 BC), most probably through the arrival of people from the Continent (section 7.3.3). However, the tradition of formal burials did not become more formalised and widespread until the start of the Early Bronze Age period (*c.* 2200-1700 BC) when both inhumation and cremation rites were practiced. This reflects a shift in belief systems towards commemorations associated with the dead, probably within a family or a small community (section 7.4.1). However, these practices became less popular after the mid-18th century BC, which possibly suggests a shift in cultural values within Middle Bronze Age communities from funerary to more ritualistic practices, such as the deposition of token cremation deposits in non-funerary contexts (sections 7.5.1 and 7.5.3).

8.2 Limitations of the research

Several limitations have been identified with this research, especially in terms of the osteological analysis of human bone deposits (section 5.2.3) and wider analysis of contextual data (section 5.3.2). One of the most important issues relates to the small number of burial deposits excavated and/or available for analysis for most chronological periods, especially for the Middle Neolithic, Late Neolithic and Chalcolithic (Appendix F). This severely restricted the analysis of contextual and osteological data presented in Chapter 5. Furthermore, as the analysis of demographic data for these periods was based on a small number of individuals, it is possible that some of the patterns identified, in terms of both the proportions of non-adults and adults represented and sex ratios, do not accurately reflect patterns within the burial data.

Another important methodological issue relates to the chronological framework used in this analysis (Chapter 3). In order to facilitate the analysis of data in Chapter 5, human bone deposits were classified under five broad chronological periods (Appendix F). In cases where the radiocarbon evidence overlapped between two of these periods, the deposits were classified within a period based on the artefactual evidence (especially ceramics) and the typochronologies discussed in Chapter 3. Deposits without radiocarbon dates or associated material culture were classified chronologically based on the contextual evidence; for example, undated token cremations in the stoneholes of standing stones were classified as Middle Bronze Age based on the fact that this type of practice was mainly recorded in this period (section 3.5.3). However, this methodological approach has potentially led to an over-simplification of the data, as deposits with similar contextual data and associated artefacts were collated within the same chronological period. It is probable that a wider range of funerary and ritual practices were available for each of the periods examined, and that changes in practices may have occurred over a longer timescale. For example, ring cairns represent a type of monument classified under the Early Bronze Age period, although several excavated sites have returned dates which spanned over both the Early and Middle Bronze Age periods (*c.* 2000-1500 cal BC: section 3.4.1.3).

8.3 Future avenues of research

The largest sample of burial deposits identified in this analysis came from the Early Bronze Age period (Appendix F). Despite the commonly stated issue in prehistoric studies that Early Bronze Age burials are not sufficiently well preserved for a detailed analysis of burial practices, the analysis of both contextual and osteological data from this period provided valuable insights into the nature of these practices. Furthermore, as this period is also associated with the largest number of radiocarbon determinations, many of which were of good quality (radiocarbon-dated cremated bones), a more precise chronology of practices could be established (section 3.4). The wider sample of deposits available for this period, combined with a better chronological resolution, presents a unique opportunity for a more detailed analysis of contextual and osteological data for the Early Bronze Age period. This could include, for example, the examination of Welsh regional burial practices, or a more detailed analysis of patterns in grave good associations as for example between different ceramic traditions (e.g. Collared Urn versus Food Vessel cremation rites). Furthermore, as this study focused only on the analysis of funerary and ritual practices associated with monumental structures, the analysis of human bone deposits from non-monumental contexts such as caves could potentially reveal the wider extent of prehistoric practices.

One shortcoming of this study is that it did not examine the question of body representation in cremation deposits with multiple individuals. The examination of which body parts were represented in the deposits for each person could highlight practices which involved only the inclusion of only certain parts of bodies in cremation burials. However, body representation patterns between individuals were not recorded in this study due to difficulties in the identification of bones from different individuals in cremation deposits. Obvious age-related differences in terms of sizes and unfused epiphyses can help to differentiate between non-adult and adult bones. However, as the more fragile bones of non-adults are more affected by taphonomic processes (section 6.3.4), it may be that missing skeletal elements from non-adults were destroyed within the burial environment. In such cases the absence of certain bones does not necessarily reflect deliberate choices in the cremation and/or burial of specific body parts.

Furthermore, it is often impossible in cremation deposits with multiple adults to identify bone fragments from different individuals; in fact in most cases the presence of more than one person was only obvious when duplicated sided elements were recorded. Although the examination of body representation patterns within could provide insightful data on cremation ritual practices, such an analysis should be carried out carefully. The methods used to distinguish bone fragments between individuals, especially between adults of similar age and size, would have to be clearly defined and justified. Furthermore, the fact that the more fragile non-adult bones may have been destroyed in the burial environment through taphonomic processes should be acknowledged.

Another aspect which could be examined is the role of cremated animal bones in MN-MBA funerary and ritual practices. The significance of animal remains in funerary practices has been increasingly recognised (McKinley 1993a: 92-100, 1997, Wilkin 2011). Due to time constraints, this study only provided frequency data on the presence of animal bones in burial deposits (section 6.5.5). A more detailed and systematic analysis of animal bones associated with MN-MBA human bone deposits would therefore offer another possible avenue of research to further define the nature of prehistoric funerary and ritual practices in Wales, especially within the larger sample of Early Bronze Age deposits (Appendix F).

The analysis of dental wear patterns within the samples of Chalcolithic and Early Bronze Age inhumations proved problematic (section 5.2.3). In several cases age estimations based on dental wear were lower than for estimates based on other cranial and post-cranial elements. This issue is unusual as dental wear patterns are generally regarded as a useful technique to provide broad age estimates on skeletons from high-rate wear populations (Mays 2002). The analysis of dental wear patterns in Chalcolithic and Early Bronze Age skeletons from Britain and Ireland, and possibly from the Continent, could help to assess whether this pattern is a reflection of the small size of the Welsh sample, or whether this could potentially reflect differences in the diets of these communities.

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Appendix A: List of radiocarbon determinations from Middle Neolithic to Middle Bronze Age funerary and ritual monuments in Wales (Taken and modified from the *Wales and Borders radiocarbon database*: Burrow and Williams 2008)

Site name	Lab code	Material	Date (BP)	SD	Start	End
Aber Camddwr, site 2	CAR-995	Charcoal (wood)	2980	70	1402	1013
Aber Camddwr, site 2	CAR-996	Charcoal (wood)	2900	70	1286	904
Aber Camddwr, site 2	CAR-997	Charcoal (wood)	3210	70	1658	1301
Afon Wen	Beta-210121	Charcoal (hazel)	3680	40	2196	1950
Afon Wen	Beta-210122	Charcoal (oak)	3670	70	2284	1882
Afon Wen	Beta-210123	Charcoal (oak)	3550	70	2126	1693
Afon Wen	Beta-210124	Charcoal (oak)	3610	60	2141	1774
Bedd Branwen	BM-452	Charcoal	4923	75	3943	3534
Bedd Branwen	BM-453	Charcoal	3224	81	1690	1297
Bedd Branwen	BM-455	Charcoal	3257	80	1742	1322
Bedd Branwen	BM-456	Charcoal	3353	60	1869	1499
Bedd Branwen	GrA-19566	Cremated bone (human, adult ?male)	3560	45	2026	1768
Bedd Branwen	GrA-19642	Cremated bone (human, adult)	3600	60	2136	1773
Bedd Branwen	GrA-19643	Cremated bone (human, adult)	3610	60	2141	1774
Bedd Branwen	GrA-19650	Cremated bone (human)	3550	60	2113	1697
Bedd Branwen	GrA-19652	Cremated bone (human, adult male)	3540	60	2032	1696
Bedd Branwen	GrA-19657	Cremated bone (human, adult)	3600	60	2136	1773
Blaen y Cae	Beta-186976	Charcoal	3460	60	1923	1630
Blaen y Cae	Beta-186977	Charcoal	3720	60	2292	1947
Blaen y Cae	Beta-186978	Charcoal	3570	60	2127	1746
Breach Farm	GrA-19964	Cremated bone (human)	3520	60	2020	1692
Breach Farm	GrA-20601	Cremated bone (human)	3530	60	2025	1695
Brenig, site 6	HAR-536	Charcoal (mixed)	3070	90	1512	1051
Brenig, site 40	GrA-22964	Cremated bone (human, adult)	3590	50	2130	1773
Brenig, site 40	HAR-799	Charcoal (oak, plank)	3420	80	1927	1527
Brenig, site 40	HAR-800	Charcoal (oak, plank)	3330	80	1872	1436
Brenig, site 42	HAR-713	Charcoal (trunk / branch)	3610	70	2195	1767
Brenig, site 44	GrA-22970	Cremated bone (human, two adults and a child)	3550	50	2024	1751
Brenig, site 44	HAR-1133	Charcoal (from several trees, ?twigs / branches)	3500	80	2030	1628
Brenig, site 44	HAR-1136	Charcoal	2960	70	1395	980

Brenig, site 44	HAR-1137	Charcoal (from several trees, ?twigs / branches)	3330	70	1862	1446
Brenig, site 44	HAR-1138	Charcoal (twigs, small branches)	3290	80	1761	1410
Brenig, site 44	HAR-500	Charcoal	3490	70	2012	1639
Brenig, site 44	HAR-501	Charcoal (twigs and small branches)	3630	100	2290	1700
Brenig, site 44	HAR-502	Charcoal (plank)	3470	70	1964	1620
Brenig, site 44	HAR-503	Charcoal (from several trees)	3230	70	1685	1317
Brenig, site 44	HAR-504	Charcoal (twiggy)	3290	80	1761	1410
Brenig, site 44	HAR-505	Charcoal (from several trees, twiggy)	3470	80	2022	1611
Brenig, site 44	HAR-535	Charcoal	3530	90	2133	1638
Brenig, site 45	HAR-1027	Organic sediment	3620	100	2286	1696
Brenig, site 45	HAR-657	Charcoal (from several trees)	3570	100	2200	1664
Brenig, site 45	HAR-658	Charred soil	3290	70	1741	1428
Brenig, site 45	HAR-712	Charcoal (from several trees)	3620	60	2194	1777
Brenig, site 45	HAR-714	Charcoal (from several trees)	3520	70	2032	1666
Brenig, site 47	HAR-1134	Charcoal (from several trees)	4090	70	2873	2488
Brenig, site 51	GrA-22792	Cremated bone (human, two adults)	3430	50	1882	1628
Brenig, site 51	HAR-801	Charcoal (from several trees)	3510	70	2025	1665
Brenig, site 51	HAR-802	Charcoal (from several trees, ?twigs)	3420	70	1903	1533
Brenig, site 51	HAR-803	Charcoal	3500	70	2020	1645
Bryn Celli Ddu	UB-7116	Cremated bone (human, adult)	4573	40	3498	3103
Bryn Celli Ddu	UB-7113	Cremated bone (human, adult ??female)	4384	46	3317	2898
Bryn Celli Ddu	UB-6824	Charcoal (blackthorn and wild/bird cherry type)	4362	40	3091	2901
Bryn Celli Ddu	UB-6825	Charcoal (mixed inc. Pomoideae)	4374	40	3261	2901
Bryn Celli Ddu	UB-7114	Cremated bone (human, adult)	4409	39	3324	2913
Bryn Celli Ddu	UB-7115	Cremated bone (human, non-adult)	4360	44	3095	2896
Bryn Celli Ddu	UB-7117	Cremated bone (human, adult)	4395	40	3314	2906
Bryn Celli Ddu	UB-7118	Cremated bone (human, adult)	4351	35	3086	2897
Bryn Gwyn	SUERC-39677	Cremated bone (human, adult, lower limb)	4315	35	3019	2886
Bryn Gwyn	SUERC-39678	Charcoal (hazel)	4185	35	2891	2637
Bryn Gwyn	SUERC-39679	Charcoal (hazel)	3380	35	1762	1562
Buttington Cross	SUERC-24309	Cremated bone (human)	3610	30	2110	1889
Candleston Cist	GrA-27614	Cremated bone (human)	3605	35	2118	1883

Candleston Cist	GrA-27615	Cremated bone (human)	3630	35	2131	1896
Capel Eithin	CAR-446	Charcoal	3950	80	2838	2200
Capel Eithin	CAR-447	Charcoal	3580	70	2136	1746
Capel Eithin	CAR-448	Charcoal	3610	70	2195	1767
Capel Eithin	CAR-449	Charcoal	3390	70	1882	1527
Capel Eithin	CAR-450	Charcoal	3600	70	2141	1754
Capel Eithin	CAR-451	Charcoal	3670	70	2284	1882
Capel Eithin	CAR-452	Charcoal	3760	70	2456	1978
Capel Eithin	CAR-453	Charcoal	3760	60	2436	1979
Capel Eithin	CAR-454	Charcoal (hazel)	3110	70	1527	1133
Capel Eithin	CAR-455	Charcoal	2530	70	807	430
Capel Eithin	CAR-456	Charcoal	3090	70	1502	1131
Capel Eithin	CAR-480	Charcoal	5520	80	4543	4176
Capel Eithin	CAR-481	Charcoal	4740	80	3658	3362
Capel Eithin	CAR-482	Charcoal	3410	70	1891	1531
Capel Eithin	CAR-486	Charcoal	3040	65	1441	1088
Capel Eithin	CAR-487	Charcoal	3150	65	1607	1235
Capel Eithin	CAR-488	Charcoal (including hazelnut shells)	4380	80	3338	2886
Carneddau, ring bank	CAR-1261	Charcoal	3350	70	1876	1457
Carneddau, site 1	CAR-1255	Charcoal	3200	70	1633	1295
Carneddau, site 1	CAR-1256	Charcoal	3310	70	1748	1436
Carneddau, site 1	CAR-1257	Charcoal	3600	70	2141	1754
Carneddau, site 1	CAR-1258	Charcoal	3560	70	2132	1696
Carneddau, site 1	CAR-1259	Charcoal	3530	70	2113	1686
Carneddau, site 1	CAR-1260	Charcoal	3440	60	1908	1616
Carneddau, site 2	CAR-1285	Charcoal	3380	70	1879	1510
Carneddau, site 2	CAR-1286	Charcoal	3430	70	1922	1545
Cefn Caer Euni, site 1	CAR-600	Charcoal	4130	70	2889	2496
Cefn Caer Euni, site 1	CAR-601	Charcoal	3380	70	1879	1510
Cefn Cwmwd	Wk-9288	Charcoal	3420	69	1900	1533
Cefn Cwmwd	Wk-9289	Charcoal	3587	57	2132	1767
Church Farm	Beta-229070	[material type not published]	3480	40	1900	1691

Church Farm	Beta-229071	[material type not published]	3350	40	1741	1529
Church Farm	Beta-229072	[material type not published]	2920	40	1257	1003
Coed-y-dinas	BM-2837	Charcoal (poplar, rowan, thorn, oak, hazel, field maple)	3630	45	2135	1890
Coity 1	Beta-25792	Charcoal	3350	40	1741	1529
Corn Du	CAR-1479	Plant material	3870	70	2561	2141
Corn Du	CAR-201	Plant material (heather)	3800	80	2471	2026
Corn Du	CAR-202	Plant material (heather)	3700	80	2346	1883
Corndon Round Barrow 7	Beta-254595	Charcoal (hazel)	3870	40	2467	2208
Corndon Round Barrow 7	Beta-254596	Charcoal (alder)	4260	40	3010	2697
Disgwylfa Fawr	HAR-2187	Wood (oak, trunk, 20 tree outermost rings from c. 10 trees)	3860	70	2561	2136
Disgwylfa Fawr	HAR-2677	Wood (trunk, below bark)	3300	80	1771	1414
Dyffryn Henge	Beta-223792	Charcoal (hazel and birch)	4000	50	2835	2346
Dyffryn Henge	Beta-223793	Charcoal (hazel and birch)	3960	50	2581	2295
Dyffryn Henge	Beta-223794	Charcoal	3830	50	2463	2142
Dyffryn Henge	Beta-223795	Charcoal (hazel and birch)	4050	70	2876	2458
Dyffryn Henge	Beta-231837	Charcoal (hawthorn/rowan)	4020	40	2833	2465
Dyffryn Henge	Beta-231249	Charcoal (hazel)	3980	40	2618	2347
Fan	SUERC-40798	Cremated bone (human)	3575	35	2029	1779
Fan	SUERC-40799	Cremated bone (human)	3630	35	2131	1896
Fan	SUERC-40800	Cremated bone (human)	3505	35	1926	1701
Fan	SUERC-40801	Cremated bone (human)	3580	35	2031	1781
Fan	SUERC-40802	Cremated bone (human)	3620	35	2125	1890
Fan Foel	GrA-29945	Cremated bone (human)	3540	40	2009	1751
Fan Foel	GrA-29949	Cremated bone (human)	3510	40	1941	1700
Fan Foel	GrA-29950	Cremated bone (human, non-adult)	3650	40	2140	1916
Fan Foel	GrA-29963	Cremated bone (human, non-adult)	3635	40	2135	1896
Four Crosses, site 1	CAR-666	Charcoal (oak, young branch)	3420	70	1903	1533
Four Crosses, site 1	CAR-667	Charcoal	3310	70	1748	1436
Four Crosses, site 2	CAR-767	Charcoal	4190	70	2910	2578
Four Crosses, site 2	CAR-810	Charcoal	3690	70	2287	1895

Four Crosses, site 2	CAR-811	Charcoal	3890	70	2569	2146
Four Crosses, site 5	CAR-668	Charcoal	3390	70	1882	1527
Four Crosses, site 5	CAR-669	Charcoal (oak)	3510	70	2025	1665
Four Crosses, site 5	CAR-670	Charcoal	4440	70	3341	2921
Four Crosses, site 5	CAR-671	Charcoal (oak)	4260	70	3086	2626
Four Crosses, site 5	CAR-707	Charcoal (oak)	4380	70	3333	2889
Four Crosses, site 7	CAR-848	Charcoal (oak, hawthorn, hazel)	3280	70	1737	1422
Gors	CAR-957	Charcoal	3290	70	1741	1428
Great Carn ring cairn 1	Birm-1150	Charcoal (oak, hazel)	3415	70	1895	1531
Great Carn ring cairn 2	Birm-1179	Charcoal	3510	60	2016	1687
Great Carn, Cefn Bryn	Birm-1235	Charcoal	4230	100	3096	2495
Great Carn, Cefn Bryn	Birm-1236	Charcoal	3960	100	2864	2147
Great Carn, Cefn Bryn	Birm-1237	Charcoal	4340	100	3349	2681
Great Carn, Cefn Bryn	Birm-1238	Burnt hazelnut shell	3990	100	2871	2208
Great Carn, Cefn Bryn	OxA-1671	Bone (crude collagen)	3450	80	1965	1534
Great Carn, Cefn Bryn	OxA-1816	Wood	3090	60	1498	1208
Great Pale	CAR-1112	Charcoal	3620	60	2194	1777
Hendre	BM-2922	Bone (human, long bones)	3480	40	1900	1691
Hendre	CAR-1278	Charcoal	4240	70	3021	2620
Hendre	CAR-1279	Charcoal (alder)	3870	70	2561	2141
Hindwell Ash Barrow	CAR-1480	Charcoal (oak)	3730	70	2399	1931
Holt	Birm-726	Charcoal	3540	130	2276	1532
Kilpaison Burrows	GrA-27618	Cremated bone (human)	3520	40	1951	1703
Kilpaison Burrows	GrA-27619	Cremated bone (human)	3370	35	1749	1546
Kilpaison Burrows	GrA-27622	Cremated bone (human)	3325	35	1690	1513
Lan Fawr cairn 3	CAR-1037	Charcoal (ash, oak)	3530	70	2113	1686
Lan Fawr cairn 3	CAR-1038	Charcoal (ash)	3330	70	1862	1446
Llandegai, circle D	GrN-26829	Charcoal (oak, hazel)	4020	40	2833	2465
Llandegai, enclosure A	GrA-22794	Cremated bone (human, female)	3525	45	1974	1700
Llandegai, enclosure A	GrN-22954	Cremated bone (human, adult female)	4480	50	3359	3013
Llandegai, enclosure A	GrN-26819	Charcoal (oak, alder, holly, Pomoideae, gorse / broom)	2600	30	826	763

Llandegai, enclosure A	GrN-27192	Charcoal (oak, mature)	4450	40	3339	2933
Llandegai, enclosure A	NPL-220	Charcoal (oak, mature)	4740	150	3932	3034
Llandegai, enclosure A	NPL-221	Charcoal (oak, mature)	4420	140	3518	2681
Llandegai, enclosure A, cremation circle	GrN-26817	Charcoal (oak)	4320	30	3014	2891
Llandegai, enclosure A, cremation circle	GrN-26818	Charcoal (oak, log / plank; ?rowan / ?holly)	4420	40	3328	2918
Llandegai, enclosure A, cremation circle	NPL-224	Charcoal (oak, large plank; hazel)	4480	150	3634	2794
Llandegai, henge B	GrA-20013	Charcoal (oak, alder, large lumps)	4100	50	2873	2496
Llandegai, henge B	GrA-20014	Charcoal (acorn)	4140	50	2878	2581
Llandegai, henge B	GrA-22966	Cremated bone (one individual)	3700	50	2275	1945
Llandegai, henge B	GrN-26820	Wood (oak)	3620	50	2140	1829
Llandegai, henge B	GrN-26821	Charcoal (oak, hazel, Pomoideae)	2890	30	1195	978
Llandegai, henge B	GrN-26822	Wood (oak, hazel, ?alder / ?hazel)	3560	40	2023	1772
Llandegai, henge B	GrN-26825	Charcoal (oak, plank)	3670	30	2139	1957
Llandegai, henge B	GrN-26826	Charcoal (oak, ?plank)	3850	30	2458	2207
Llandegai, henge B	GrN-26827	Charcoal (oak, hazel, Pomoideae)	4210	50	2910	2632
Llandegai, henge B	NPL-222	Charcoal (oak, mature)	3740	145	2568	1758
Llanelwedd Rocks 2	SUERC-24766	Charcoal (hazel)	3680	35	2194	1954
Llanelwedd Rocks 2	SUERC-24769	Charcoal (oak, 5 rings)	3670	35	2190	1946
Llanelwedd Rocks 2	SUERC-290090	Charred grains (4 barley grains)	3670	40	2195	1939
Llanmaes	UBA-16269	Cremated bone (human)	3665	30	2136	1956
Llanymynech	Beta-239523	Cremated bone (human)	3430	40	1879	1637
Llanymynech	SUERC-18873	Cremated bone (human)	3450	30	1880	1688
Llanystumdwy	SUERC-44825	Cremated bone (human)	3262	35	1622	1451
Llanystumdwy	SUERC-44826	Cremated bone (human)	3263	35	1623	1451
Llanystumdwy	SUERC-44827	Cremated bone (human)	3225	35	1610	1427
Longstone Field	CAR-315	Charcoal (oak, branch, heartwood)	3310	70	1748	1436
Lower Luggy	Beta-29332	Cremated bone (human)	4280	45	3022	2706
Lower Luggy	BM-2954	Charcoal (oak, post, outer rings)	4830	45	3704	3521
Lower Luggy	BM-2955	Charcoal (oak, post, outer rings)	4710	40	3633	3372

Lower Luggy enclosure	Beta-177037	Charcoal (hazel, twig)	4760	50	3645	3377
Lower Luggy enclosure	Beta-206282	Charcoal (hazel, twig)	4690	40	3630	3368
Lower Luggy enclosure	Beta-206283	Charcoal (hazel, twig)	4980	40	3937	3656
Lower Luggy enclosure	GrA-29332	Bone (human, cremated)	4280	45	3022	2706
Malborough Grange Barrow	GX-1213	Charcoal	Failed	Failed	-	-
Meusydd henge	Beta-249073	Charcoal (oak, timber)	3900	40	2481	2212
Meusydd henge	Beta-249074	Charcoal (oak)	3800	40	2452	2059
Meusydd, timber circle 1	Beta-249071	Charcoal (oak)	4410	40	3325	2913
Meusydd, timber circle 1	Beta-249072	Cremated bone (human)	4280	40	3017	2762
Moel Goedog Circle 1	CAR-160	Charcoal	3500	70	2020	1645
Moel Goedog Circle 1	CAR-161	Charcoal	3450	70	1949	1566
Moel Goedog Circle 1	CAR-162	Charcoal	3610	70	2195	1767
Moel Goedog Circle 1	CAR-163	Charcoal	3600	70	2141	1754
Moel Goedog Circle 1	CAR-164	Charcoal	3470	70	1964	1620
Moel Goedog Circle 1	CAR-165	Charcoal	3640	70	2205	1776
Moel Goedog Circle 1	CAR-166	Charcoal	3470	70	1964	1620
Mynydd Llangynderyn	Birm-950	Charcoal (including oak)	3090	100	1607	1053
Nant Maden	BM-1113	Charcoal	3518	51	2008	1695
Nant Maden	BM-1114	Charcoal	3475	36	1891	1692
Pant-y-butler 2	SUERC-36628	Bone (human)	3675	35	2192	1952
Pantymenyn	CAR-1462	Charcoal (?oak)	3540	70	2118	1690
Pantymenyn	CAR-1492	Charcoal (oak, hazel, alder)	3450	60	1916	1624
Pantymenyn	CAR-1496	Charcoal (oak, hazel)	3530	70	2113	1686
Parc Maen	CAR-494	Charcoal (wood)	3280	70	1737	1422
Parc Maen	CAR-495	Charcoal (wood)	3490	80	2024	1625
Parc Maen	CAR-567	Charcoal (wood)	3330	70	1862	1446
Parc Maen	CAR-568	Charcoal (wood)	3240	70	1689	1323
Parc Maen	CAR-569	Charcoal (wood)	3180	60	1611	1300
Parc Maen	CAR-570	Charcoal (wood)	3550	70	2126	1693
Penmaenmawr, circle 278	NPL-10	Charcoal	3355	155	2118	1280
Penmaenmawr, circle 278	NPL-11	Charcoal	3470	145	2197	1450

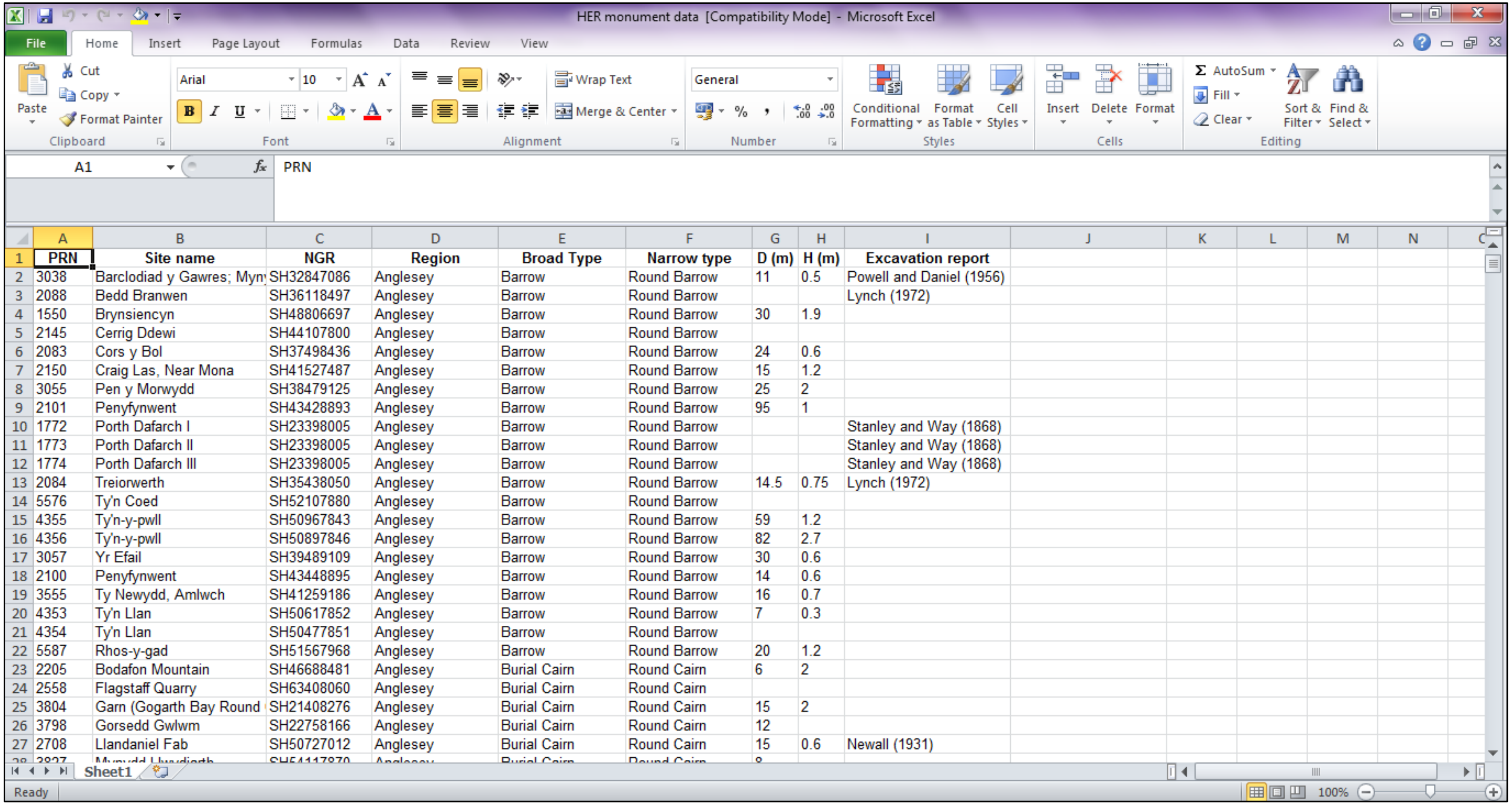
Penmaenmawr, monument 280	NPL-12	Charcoal	3080	145	1659	935
Pennant Melangell Church	CAR-1249	Charcoal	3140	70	1606	1221
Pennant Melangell Church	CAR-1250	Charcoal	3000	70	1414	1031
Pennant Melangell Church	CAR-1309	Charcoal	3180	60	1611	1300
Penrhiw Cradoc, cairn B	CAR-470	Charcoal	3505	70	2023	1661
Penrhiw Cradoc, cairn B	CAR-471	Charcoal	3400	70	1885	1529
Penrhiw Cradoc, cairn B	CAR-472	Charcoal	3650	70	2273	1781
Penrhiw Cradoc, cairn B	CAR-556	Charcoal	3475	65	1951	1630
Pentre	HAR-958	Charcoal (oak, large timbers)	3470	70	1964	1620
Pen-y-Fan	CAR-1365	Wood (oak, roundwood, outer rings)	3820	60	2466	2060
Pen-y-Fan	CAR-1367	Plant material	3590	90	2199	1695
Pen-y-Fan	CAR-1386	Wood (hazel, stake, outer rings)	4350	70	3331	2875
Pillar of Eliseg	UBA-27870	Cremated bone (human)	3683	38	2196	1955
Pillar of Eliseg	UBA-28200	Cremated bone (human)	3605	31	2036	1886
Pillar of Eliseg	UBA-27868	Cremated bone (human)	3633	25	2123	1921
Pillar of Eliseg	UBA-27869	Cremated bone (human)	3569	29	2021	1781
Plas Gogerddan	CAR-1073	Charcoal (twiggy wood)	2770	60	1071	806
Plas Gogerddan	CAR-993	Charcoal (oak)	2950	70	1390	943
Plas Gogerddan	CAR-994	Charcoal (mixed wood)	4700	70	3637	3363
Pond Cairn	BM-1111	Charcoal (gorse, oak)	3506	51	1956	1691
Pont-ar-Daf	UB-3216	Charcoal (oak, hazel, poplar, rowan)	3510	60	2016	1687
Riversdale	OxA-3814	Bone (human)	[Date not published]	[Uncertainty not published]	2830	2140
Sarn-y-bryn-caled	BM-2829	Charcoal (oak, sapwood)	4740	35	3637	3378
Sarn-y-bryn-caled penannular ring ditch	BM-2819	Charcoal (oak, sapwood)	4220	40	2908	2675
Sarn-y-bryn-caled penannular ring ditch	BM-2820	Charcoal (oak, sapwood)	4400	45	3325	2907

Sarn-y-bryn-caled penannular ring ditch	SUERC-24171	Cremated bone (human, adult, cranial vault)	4145	30	2875	2624
Sarn-y-bryn-caled penannular ring ditch	SUERC-24172	Cremated bone (human, non-adult, 3 long bone fragments)	4255	30	2918	2861
Sarn-y-bryn-caled penannular ring ditch	SUERC-24176	Cremated bone (human, adult ?female, cranial parietal)	4315	30	3013	2888
Sarn-y-bryn-caled timber circle	BM-2805	Charcoal (oak, outer rings)	3730	40	2281	1985
Sarn-y-bryn-caled timber circle	BM-2806	Charcoal (oak, outer rings)	3670	40	2195	1939
Sarn-y-bryn-caled timber circle	BM-2807	Charcoal (oak, outer rings)	3660	40	2190	1926
Sarn-y-bryn-caled timber circle	BM-2808	Charcoal (oak, outer rings)	3720	40	2275	1980
Sarn-y-bryn-caled timber circle	BM-2809	Charcoal (oak, outer rings)	3660	40	2190	1926
Sarn-y-bryn-caled timber circle	BM-2810	Charcoal (oak, outer rings)	3900	50	2559	2207
Sarn-y-bryn-caled timber circle	SUERC-27586	Cremated bone (human, adult, individual 1)	3600	35	2116	1881
Sarn-y-bryn-caled timber circle	SUERC-27587	Cremated bone (human, adult, individual 2)	3595	35	2113	1831
Sarn-y-bryn-caled timber circle	SUERC-27588	Cremated bone (animal, pig)	3575	35	2029	1779
Sarn-y-bryn-caled timber circle	SUERC-27589	Cremated bone (human, adult)	3545	35	2009	1766
Sarn-y-bryn-caled timber circle	SUERC-27590	Cremated bone (animal, pig)	3640	35	2135	1912
Simondston cairn	GrA-19966	Cremated bone (human, two adults and a child)	3630	60	2197	1782
Simondston cairn	GrA-19967	Cremated bone (human, adult and two children)	3580	60	2131	1751
Six Wells 271	GrA-27617	Cremated bone (human)	3215	35	1607	1417
Six Wells 271	GrA-27623	Cremated bone (human)	3210	40	1608	1412
Steynton	SUERC-54663	Cremated bone (human, adolescent and young child, leg bone fragment)	3651	29	2135	1941
Steynton	SUERC-54668	Charred residue	3416	29	1869	1630

Steynton	SUERC-54669	Cremated bone (human, 2 young children, distal tibia)	3470	29	1884	1695
Steynton	SUERC-54670	Charcoal (hazel)	3484	29	1888	1700
Steynton	SUERC-54671	Cremated bone (human, infant and adult, occipital and maxilla)	3522	29	1928	1756
Steynton	SUERC-54672	Cremated bone (human, 5 individuals, upper limb fragment)	3605	29	2031	1891
Steynton	SUERC-54673	Charred residue	3478	29	1887	1697
Steynton	SUERC-54674	Charcoal (holly)	3549	29	1973	1772
Steynton	SUERC-54678	Charcoal (hazel)	3588	29	2025	1884
Steynton	SUERC-54679	Cremated bone (human, non-adult and adult, humerus)	3619	29	2115	1896
Steynton	SUERC-54680	Charcoal (hazel)	3484	29	1888	1700
Steynton	SUERC-54681	Charred residue	3462	29	1881	1693
Tandderwen	CAR-1189	Charcoal	3570	80	2139	1694
Tandderwen	CAR-1193	Charcoal (plank)	3610	70	2195	1767
Tandderwen	CAR-1277	Charcoal (plank)	3350	70	1876	1457
Treiorwerth	GrA-19567	Cremated bone (human)	3490	45	1926	1692
Treiorwerth	GrA-19653	Cremated bone (human, two adults)	3500	60	2010	1667
Treiorwerth	GrA-19662	Cremated bone (human)	3640	60	2200	1831
Treiorwerth	GrA-19663	Cremated bone (human)	3500	60	2010	1667
Trelystan	CAR-272	Charcoal (hazel, rowan, hazelnut shells)	4260	70	3086	2626
Trelystan	CAR-273	Charcoal (hazel, hawthorn, rowan)	4140	70	2893	2498
Trelystan	CAR-274	Hazelnut shells	3990	70	2855	2291
Trelystan	CAR-275	Charcoal	4050	70	2876	2458
Trelystan	CAR-276	Wood (hazel, twig)	3960	70	2835	2209
Trelystan	CAR-277	Charcoal (wood and hazelnut shells)	3450	70	1949	1566
Trelystan	CAR-278	Charcoal (hazel)	3500	60	2010	1667
Trelystan	CAR-279	Charcoal (hazel, hawthorn)	3750	70	2451	1955
Trelystan	CAR-280	Charcoal (stake)	3650	70	2273	1781
Trelystan	CAR-281	Charcoal (oak, log)	3700	70	2291	1901
Trelystan	CAR-282	Charcoal (oak)	4350	70	3331	2875

Trelystan	CAR-283	Charcoal (oak)	3550	60	2113	1697
Trelystan	CAR-285	Charcoal (hazel)	3540	70	2118	1690
Trelystan	CAR-390	Charcoal	3550	70	2126	1693
Walton Court	SUERC-26430	Charcoal (hazel)	3945	35	2569	2308
Welsh St Donats 2	HAR-4168	Charcoal (oak)	4220	70	3009	2579
Welsh St Donats 3	BM-1679R	Charcoal (oak, post)	3020	100	1499	996
Welsh St Donats 3	BM-1680N	Charcoal (oak)	3510	50	1961	1692
Welsh St Donats 3	BM-1681R	Charcoal (oak)	3470	100	2109	1528
Yr Allor pit circle	CAR-1464	Charcoal (?oak)	3460	70	1957	1613
Yr Allor pit circle	CAR-1490	Charcoal (oak)	3550	70	2126	1693
Yr Allor pit circle	CAR-1491	Charcoal (oak, hazel)	3630	70	2201	1776
Ysgwennant	Birm-85	Charcoal	3423	82	1936	1528
Ystrad-Hynod	NPL-243	Charcoal (Pedunculate oak)	3450	140	2137	1447

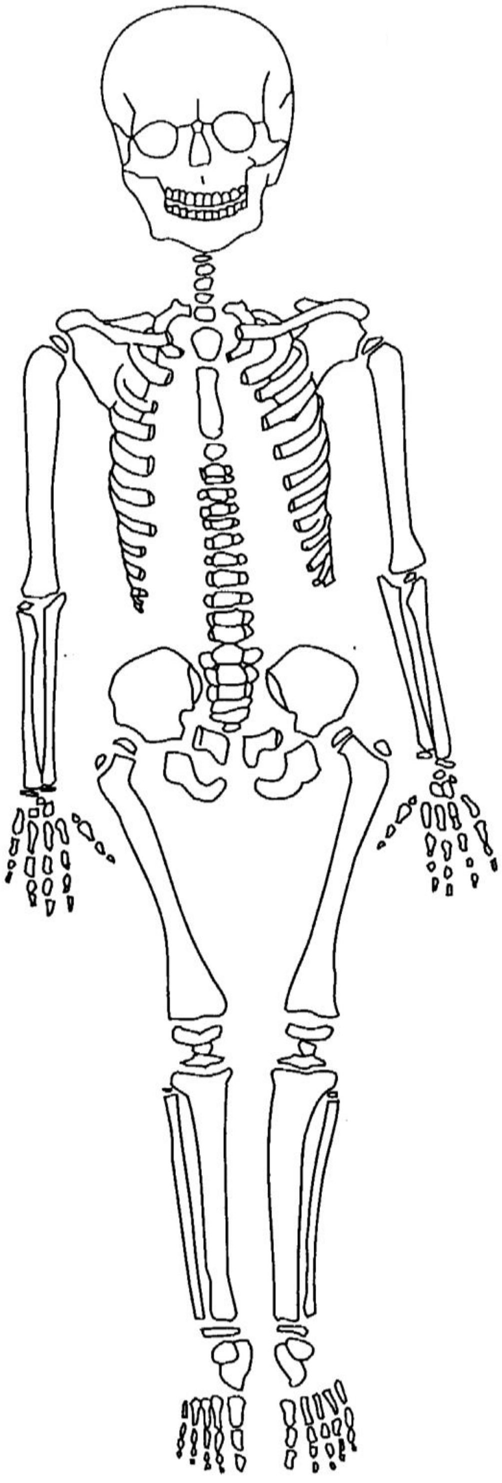
Appendix B: Example of HER data summary spreadsheet



PRN	Site name	NGR	Region	Broad Type	Narrow type	D (m)	H (m)	Excavation report
3038	Barclodiad y Gawres; Myn	SH32847086	Anglesey	Barrow	Round Barrow	11	0.5	Powell and Daniel (1956)
2088	Bedd Branwen	SH36118497	Anglesey	Barrow	Round Barrow			Lynch (1972)
1550	Brynsiencyn	SH48806697	Anglesey	Barrow	Round Barrow	30	1.9	
2145	Cerrig Ddewi	SH44107800	Anglesey	Barrow	Round Barrow			
2083	Cors y Bol	SH37498436	Anglesey	Barrow	Round Barrow	24	0.6	
2150	Craig Las, Near Mona	SH41527487	Anglesey	Barrow	Round Barrow	15	1.2	
3055	Pen y Morwydd	SH38479125	Anglesey	Barrow	Round Barrow	25	2	
2101	Penyfynwent	SH43428893	Anglesey	Barrow	Round Barrow	95	1	
1772	Porth Dafarch I	SH23398005	Anglesey	Barrow	Round Barrow			Stanley and Way (1868)
1773	Porth Dafarch II	SH23398005	Anglesey	Barrow	Round Barrow			Stanley and Way (1868)
1774	Porth Dafarch III	SH23398005	Anglesey	Barrow	Round Barrow			Stanley and Way (1868)
2084	Treiorwerth	SH35438050	Anglesey	Barrow	Round Barrow	14.5	0.75	Lynch (1972)
5576	Ty'n Coed	SH52107880	Anglesey	Barrow	Round Barrow			
4355	Ty'n-y-pwll	SH50967843	Anglesey	Barrow	Round Barrow	59	1.2	
4356	Ty'n-y-pwll	SH50897846	Anglesey	Barrow	Round Barrow	82	2.7	
3057	Yr Efail	SH39489109	Anglesey	Barrow	Round Barrow	30	0.6	
2100	Penyfynwent	SH43448895	Anglesey	Barrow	Round Barrow	14	0.6	
3555	Ty Newydd, Amlwch	SH41259186	Anglesey	Barrow	Round Barrow	16	0.7	
4353	Ty'n Llan	SH50617852	Anglesey	Barrow	Round Barrow	7	0.3	
4354	Ty'n Llan	SH50477851	Anglesey	Barrow	Round Barrow			
5587	Rhos-y-gad	SH51567968	Anglesey	Barrow	Round Barrow	20	1.2	
2205	Bodafon Mountain	SH46688481	Anglesey	Burial Cairn	Round Cairn	6	2	
2558	Flagstaff Quarry	SH63408060	Anglesey	Burial Cairn	Round Cairn			
3804	Garn (Gogarth Bay Round	SH21408276	Anglesey	Burial Cairn	Round Cairn	15	2	
3798	Gorsedd Gwlwm	SH22758166	Anglesey	Burial Cairn	Round Cairn	12		
2708	Llandaniel Fab	SH50727012	Anglesey	Burial Cairn	Round Cairn	15	0.6	Newall (1931)

Appendix C: Record sheets templates

Skeleton:

Context:	**Skeletal inventory: non-adult** 
Position:	
Orientation:	
Preservation:	
Completeness:	
Notes:	

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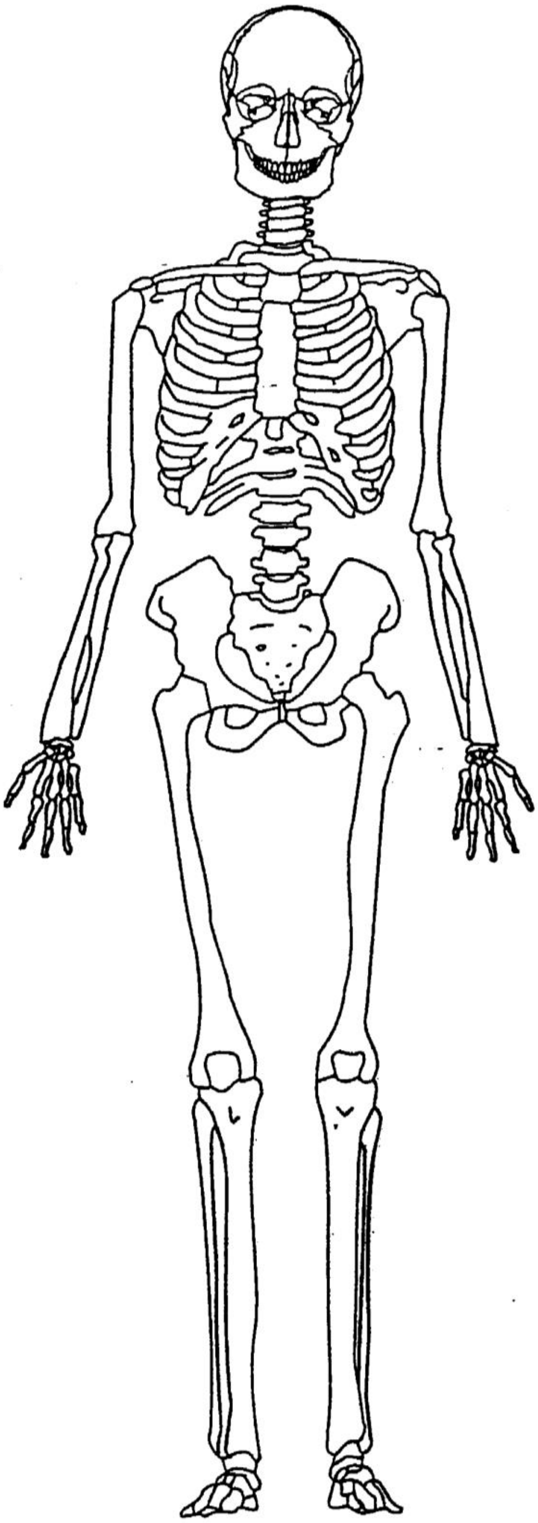
<tr><td>Context:</td><td rowspan="6">Skeletal inventory: adult
</td></tr>
<tr><td>Position:</td></tr>
<tr><td>Orientation:</td></tr>
<tr><td>Preservation:</td></tr>
<tr><td>Completeness:</td></tr>
<tr><td>Notes:</td></tr>
</table>

Deciduous dentition record sheet

Site:
Skeleton:

Dentition:

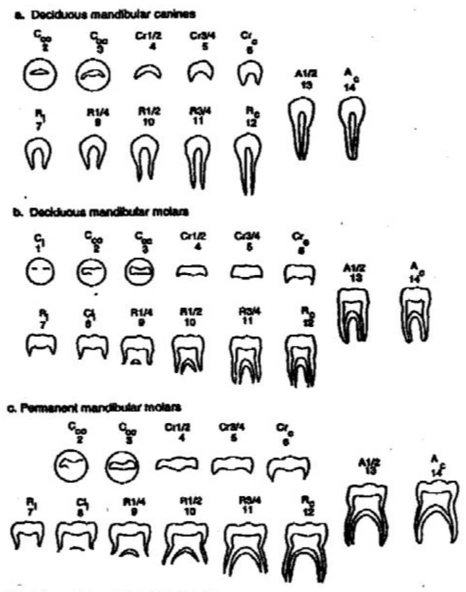
55	54	53	52	51	61	62	63	64	65
85	84	83	82	81	71	72	73	74	75

Number of erupted teeth present:

Number of positions present:

/ = lost PM
X = lost AM
B = broken PM
R= root only

— = jaw and teeth not present
A = tooth absent (congenital)
NE = not erupted
PE=partial eruption



Code	Stage	Code	Stage
1	Initial cusp formation	8	Initial cleft formation
2	Coalescence of cusps	9	Root length 1/4
3	Cusp outline complete	10	Root length 1/2
4	Crown 1/2 complete	11	Root length 3/4
5	Crown 3/4 complete	12	Root length complete
6	Crown complete	13	Apex 1/2 closed
7	Initial root formation	14	Apex closed

(After Smith 1991)

Estimated Age:

Comments:

Mixed dentition record sheet

Site:
Skeleton:

Dentition:

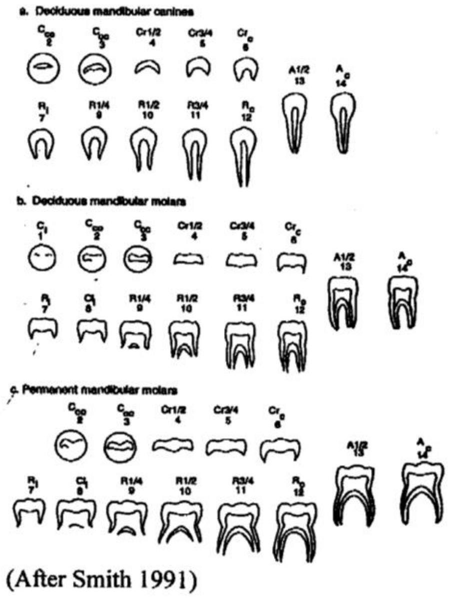
18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28
			55	54	53	52	51	61	62	63	64	65			
			85	84	83	82	81	71	72	73	74	75			
48	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38

Number of (erupted) teeth present:

Number of positions present:

/ = lost PM
X = lost AM
B = broken PM
R= root only

— = jaw and teeth not present
A = tooth absent (congenital)
NE = not erupted
PE=partial eruption



Code	Stage	Code	Stage
1	Initial cusp formation	8	Initial cleft formation
2	Coalescence of cusps	9	Root length 1/4
3	Cusp outline complete	10	Root length 1/2
4	Crown 1/2 complete	11	Root length 3/4
5	Crown 3/4 complete	12	Root length complete
6	Crown complete	13	Apex 1/2 closed
7	Initial root formation	14	Apex closed

(After Smith 1991)

Estimated Age:

Comments:

Permanent dentition record sheet

Site:
Skeleton:

Dentition

18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28
48	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38

Number of teeth present:

Number of positions present:

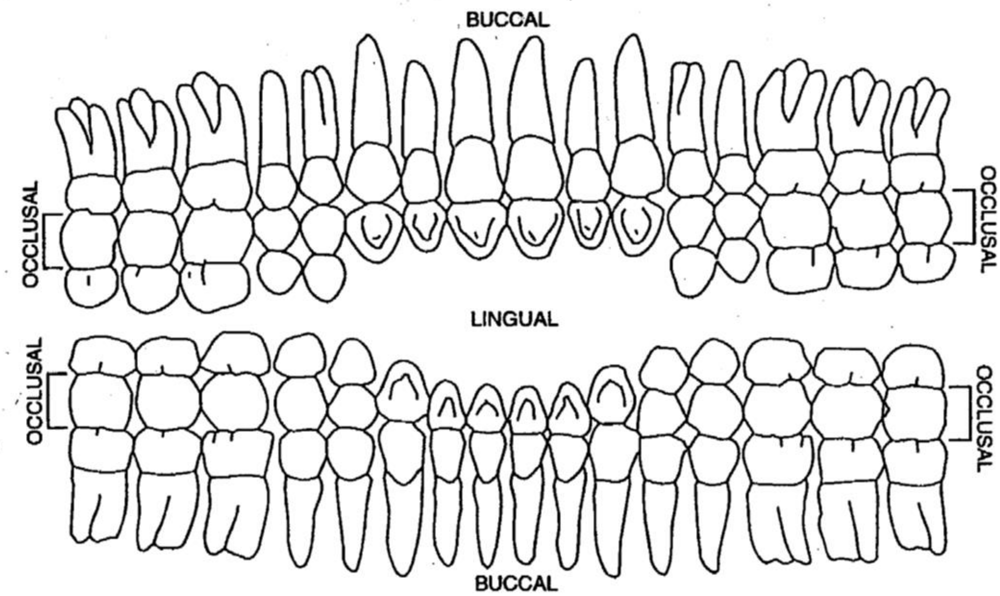
/ = lost PM
X = lost AM
B = broken PM
R= root only

— = jaw and teeth not present
A = tooth absent (congenital)
NE = not erupted

Loose teeth:

Dental wear:

(For scoring see Murphy 1959, Smith 1984 – incisors, canines and premolars. Scott 1979 – n
Buikstra and Ubelaker 1994). Note – only the left side is recorded unless there is asymmetry



Estimated age:

Comments:

Age estimation: non-adult

Skeleton:

Bone union and epiphyseal fusion		
Bone	**Stage of union**	**Age estimation**
Mandibular symphysis		
Metopic suture		
Occipital lateral to squama		
Occipital basilar to lateral		
Speno-occipital synchondrosis		
C neural arches midline		
C neural arches to body		
T neural arches midline		
T neural arches to body		
L neural arches midline		
L neural arches to body		
S1-S2		
S3-S5		
Scapula coracoid		
Scapula acromion		
Scapula glenoid cavity		
Clavicle sternal		
Proximal humerus		
Distal humerus		
Humerus medial epicondyle		
Proximal radius		
Distal radius		
Proximal ulna		
Distal ulna		
Ilium-pubis		
Ischium-pubis		
Ischium-ilium		
Iliac crest		
Ischial tuberosity		
Femoral head		
Femur greater trochanter		
Femur lesser trochanter		
Distal femur		
Proximal tibia		
Distal tibia		
Proximal fibula		
Distal fibula		

Dental development (from dentition record sheet):

Age estimation:

Age estimation: adult

Method	**Phase/score**	**Age range**
Pubic symphysis: Brooks and Suchey (1990)		
Auricular surface: Lovejoy *et al* (1985b)		
Auricular surface: modified Lovejoy *et al* (1985b) (Osborne *et al* 2004)		
Auricular surface: Buckberry and Chamberlain (2002)		
Auricular surface: modified Buckberry and Chamberlain (2002) (Falys *et al* 2006)		
Cranial suture closure (vault): Meindl and Lovejoy (1985)		
Cranial suture closure (lateral-anterior): Meindl and Lovejoy (1985)		
Dental attrition: Brothwell (1981) (from dentition record sheet)		

Third molar eruption	**State:**	**Age range:**

Epiphyseal fusion	**Stage of union**	**Age range**
Medial clavicle		
Sacral vertebrae		
Sternum		
Ischial tuberosity		
Iliac crest		

Estimated age:

Comments:

Sex assessment: adult

Pelvic morphology		
Trait	**Score/morphology**	**Sex**
Ventral arc		
Subpubic concavity		
Subpubic angle		
Ischiopubic ramus		
Greater sciatic notch		
Preauricular sulcus		
Sacral morphology		

Cranial morphology		
Trait	**Score/morphology**	**Sex**
Nuchal crest		
Mastoid process		
Posterior zygomatic arch		
Supra-orbital margin		
Supra-orbital ridge		
Glabella		
Orbit shapes		
Parietal bossing		
Frontal bossing		
Mental eminence		
Gonial angle		
Gonial flaring		
Mandibular ramus		
Palate shape		

Sex assessment:

Comments:

Cremation record sheet

Site:	**Deposit:**	**Catalogue No.:**

Total weight (g):	
Max fragment length (mm):	

Fragmentation:

	Weight (g)	%
>10mm		
5-10mm		
2-5mm		
Total		

Heat-fractures:

Combustion grade:

Bone identification:

Location	Weight (g)	%
Skull		
Axial		
Upper limbs		
Lower limbs		
Unidentified		
Total		

Demographic data:

	Assessment	*Criteria*
MNI		
Age		
Sex		

Pathological lesions:

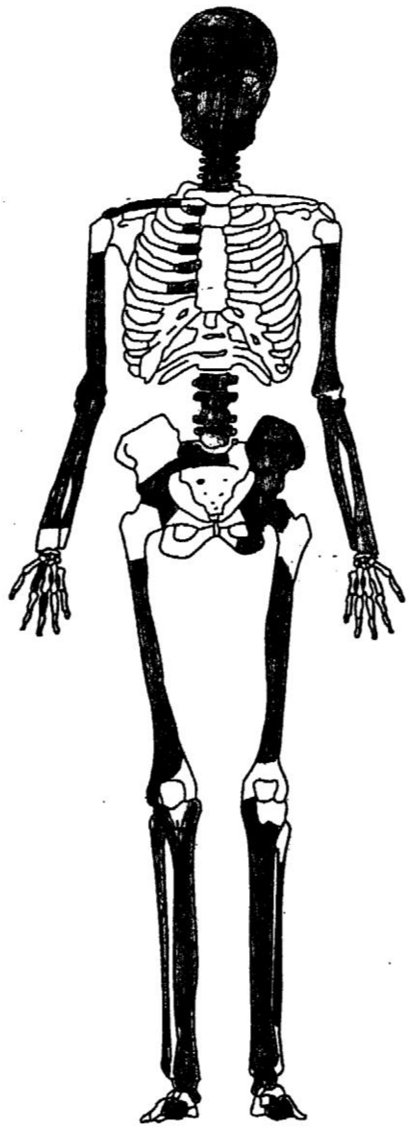
Identified bone fragments:

Other material:

Appendix D: Record sheets examples

Skeleton: Sutton 268'	

Context: central pit	**Skeletal inventory: adult**
Position: crouched	
Orientation: N-S	
Preservation: 3	
Completeness: 75-100%	
Notes:	



Permanent dentition record sheet

Site:
Skeleton: Sutton 268'

Dentition

18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28
48	~~47~~	46	45	44	43	42	41	31	32	33	34	35	36	37	38

↘ removed for C14 dating

Number of teeth present:

Number of positions present:

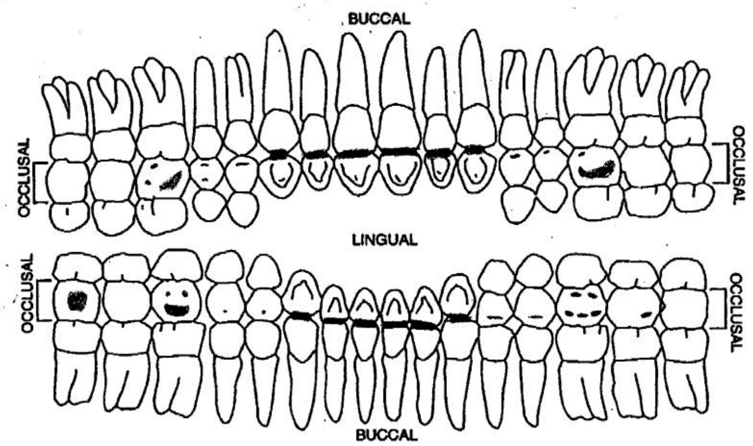
/ = lost PM
X = lost AM
B = broken PM
R= root only

— = jaw and teeth not present
A = tooth absent (congenital)
NE = not erupted

Loose teeth:

Dental wear:

(For scoring see Murphy 1959, Smith 1984 – incisors, canines and premolars. Scott 1979 – molars, Buikstra and Ubelaker 1994). Note – only the left side is recorded unless there is asymmetry



Estimated age: 25-35 years

Comments:

Sutton 268'

Sex assessment: adult

Pelvic morphology		
Trait	**Score/morphology**	**Sex**
Ventral arc	–	N/A
Subpubic concavity	–	N/A
Subpubic angle	–	N/A
Ischiopubic ramus	–	N/A
Greater sciatic notch	5	Male
Preauricular sulcus	Absent	Male
Sacral morphology	–	N/A

Cranial morphology		
Trait	**Score/morphology**	**Sex**
Nuchal crest	4	? male
Mastoid process	4	? male
Posterior zygomatic arch	Beyond EOM + well def.	Male
Supra-orbital margin	4	? male
Supra-orbital ridge	4	? male
Glabella	5	Male
Orbit shapes	Square	Male
Parietal bossing	Not well def	Male
Frontal bossing	Defined	? female
Mental eminence	4	Male
Gonial angle	~ 90°	Male
Gonial flaring	well developed	Male
Mandibular ramus	Broad + vertical	Male
Palate shape	U-shaped	Male

Sex assessment: Male

Comments: —

Sutton 268'

Age estimation: adult

Method	Phase/score	Age range
Pubic symphysis: Brooks and Suchey (1990)	—	—
Auricular surface: Lovejoy *et al* (1985b)	5-6	19 - 77
Auricular surface: modified Lovejoy *et al* (1985b) (Osborne *et al* 2004)	5-6	24 - 89
Auricular surface: Buckberry and Chamberlain (2002)	V	29 - 88
Auricular surface: modified Buckberry and Chamberlain (2002) (Falys *et al* 2006)	II	18 - 90
Cranial suture closure (vault): Meindl and Lovejoy (1985)	cranium incomplete - could not add scores (but several sutures w/ score 3	
Cranial suture closure (lateral-anterior): Meindl and Lovejoy (1985)	= older age?)	
Dental attrition: Brothwell (1981) (from dentition record sheet)		25-35

Third molar eruption	State: erupted	Age range: >18 yo

Epiphyseal fusion	Stage of union	Age range
Medial clavicle	F	>17
Sacral vertebrae	—	—
Sternum	—	—
Ischial tuberosity	F	>16
Iliac crest	F	>17

Estimated age: Older adult (> 40 years)

↓ based on auricular surface, fused cranial sutures + DJD

Comments: OA - R knee + L wrist

Marginal osteophytosis - L vertebrae

Cremation record sheet

Site: Afon Wen (PRN 19659)	Deposit: SF4	ID No.: 45

Total weight (g):	2343.1
Max fragment length (mm):	110

Fragmentation:

	Weight (g)	%
>10mm	1273.5	58.2
5-10mm	566.6	25.9
2-5mm	346.4	15.8
Total	2186.5	100

Heat-fractures:

Longitudinal, straight transverse, curved transverse, patina, delamination

Combustion grade:

IV – all white, except a few bone fragments (inner diploë of cranial vault, thicker long bone diaphyses and trabecular bone of vertebral bodies) with grey colours

Bone identification:

Location	Weight (g)	%
Skull	247.7	11.3
Axial	121.0	5.5
Upper limbs	157.6	7.2
Lower limbs	200.6	9.2
Unidentified	1459.6	66.8
Total	2186.5	100

Demographic data:

	Assessment	*Criteria*
MNI	2	2 right mastoid processes
Age	1) adult: ?middle	All visible epiphyses fused, cortical bone generally thick and trabecular bone dense
	2) adult: older	Partially fused cranial sutures, cortical bone less dense, degenerative changes
Sex	1) male	Nuchal crest (#4), supra-orbital ridge (#4), glabella (#4)
	2) ?female	Nuchal crest (#1), gonial angle (>90°), mastoid process (#1)

Pathological lesions:

Osteophytes – facet for dens of axis and left articular process of atlas, articular and spinous processes of thoracic vertebrae, manual and pedal phalanges; marginal osteophytosis and micro-porosity on cervical and thoracic vertebral bodies (disc degeneration)

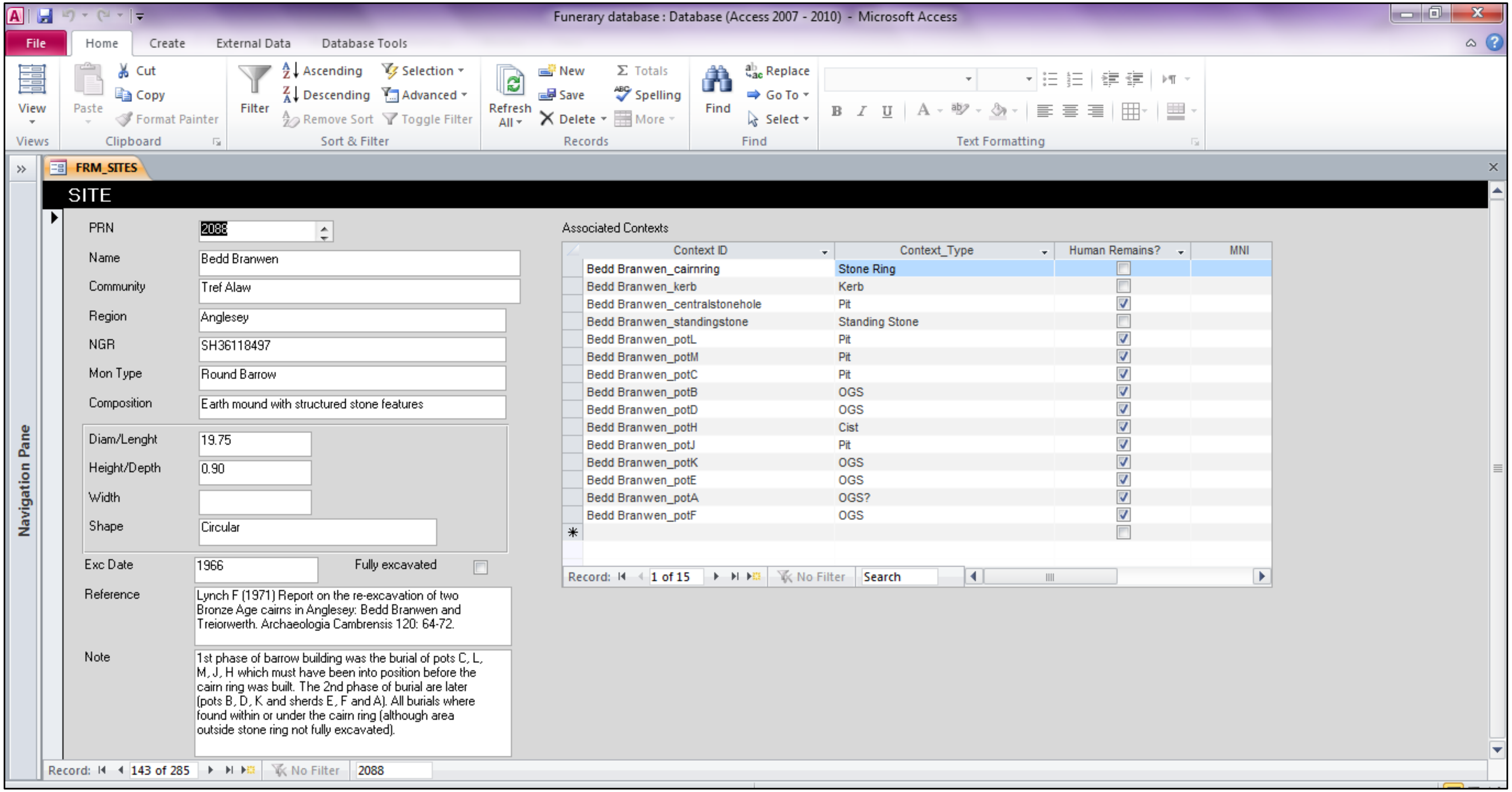
Identified bone fragments:

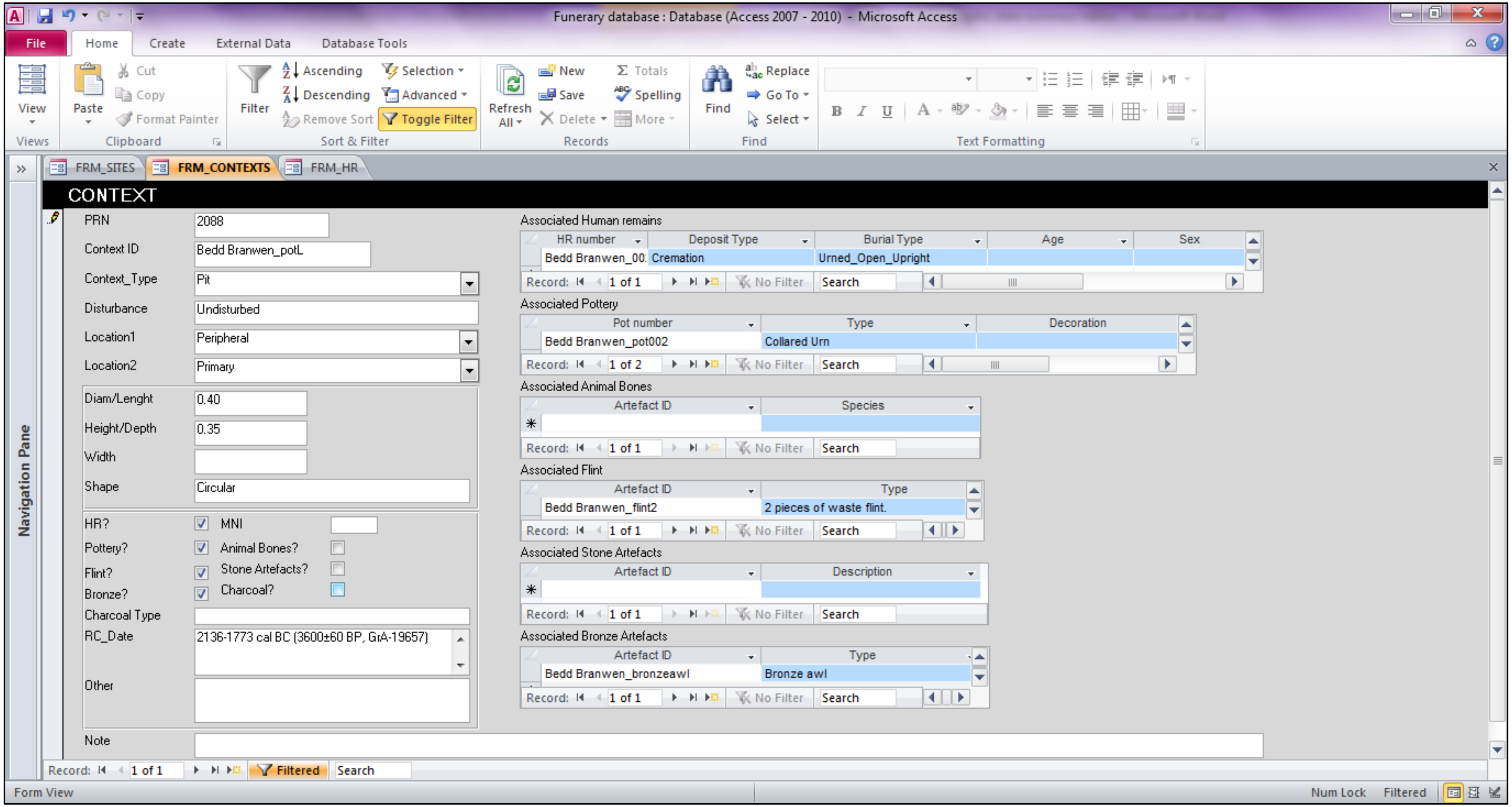
Cranial vault, 2 right petrous temporal bones (inc. mastoid processes), sphenoid, frontal bone, right and left maxillae with alveolar processes, mandible – ramus, coronoid process, gonial angle, body with alveolar process; single- (inc. incisor, canine and premolar) and multi-rooted teeth (molars), clavicle, rib shafts, vertebrae – atlas, axis, bodies (5C, 7T, 1L), spinous processes (of T); ilium (with auricular surface), ischium, pubic bone, diaphyses long bones – humerus, radius, ulna, femur, tibia, fibula; 2 distal humerii, distal radius, 2 distal ulnae, femoral head, distal femur, distal tibia, proximal fibula, metacarpals, manual phalanges, hamate, 2 scaphoids, lunate, metatarsals, pedal phalanges, calcaneus, cuboid, cuneiform, navicular

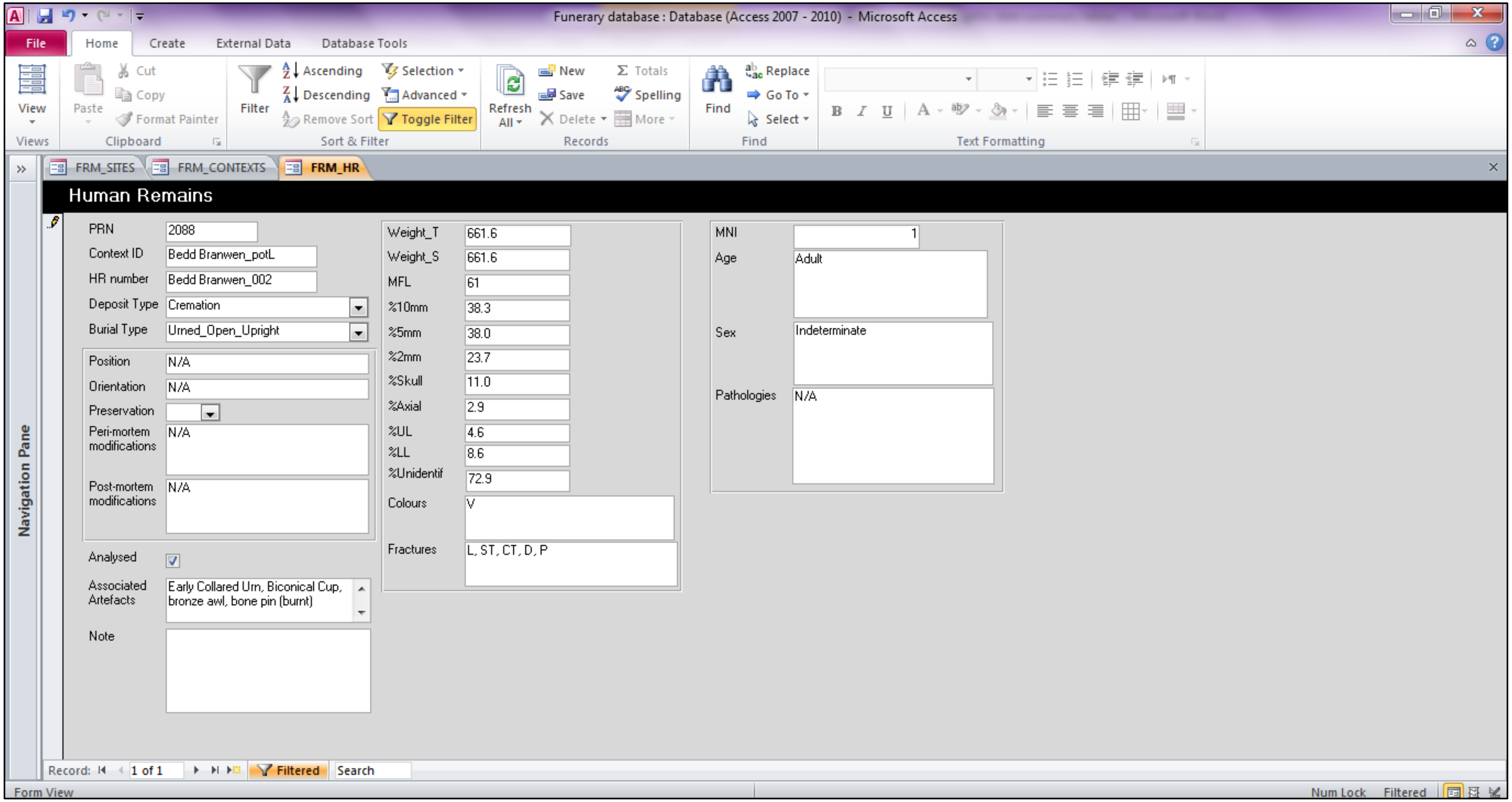
Other material:

Cremated animal bones, fragments with blue/green stains – from copper-alloy object?

Appendix E: Example of the Access database of funerary and ritual data


Funerary database : Database (Access 2007 - 2010) - Microsoft Access
File
Home
Create
External Data
Database Tools
View
Paste
Cut
Copy
Format Painter
Filter
Ascending
Descending
Remove Sort
Selection
Advanced
Toggle Filter
Refresh All
New
Save
Delete
Totals
Spelling
More
Find
Replace
Go To
Select
Views
Clipboard
Sort & Filter
Records
Find
Text Formatting
Navigation Pane
FRM_SITES
SITE
PRN 2088
Name Bedd Branwen
Community Tref Alaw
Region Anglesey
NGR SH36118497
Mon Type Round Barrow
Composition Earth mound with structured stone features
Diam/Lenght 19.75
Height/Depth 0.90
Width
Shape Circular
Exc Date 1966
Fully excavated
Reference Lynch F (1971) Report on the re-excavation of two Bronze Age cairns in Anglesey: Bedd Branwen and Treiorwerth. Archaeologia Cambrensis 120: 64-72.
Note 1st phase of barrow building was the burial of pots C, L, M, J, H which must have been into position before the cairn ring was built. The 2nd phase of burial are later (pots B, D, K and sherds E, F and A). All burials where found within or under the cairn ring (although area outside stone ring not fully excavated).
Associated Contexts
Context ID
Context_Type
Human Remains?
MNI
Bedd Branwen_cairnring Stone Ring
Bedd Branwen_kerb Kerb
Bedd Branwen_centralstonehole Pit
Bedd Branwen_standingstone Standing Stone
Bedd Branwen_potL Pit
Bedd Branwen_potM Pit
Bedd Branwen_potC Pit
Bedd Branwen_potB OGS
Bedd Branwen_potD OGS
Bedd Branwen_potH Cist
Bedd Branwen_potJ Pit
Bedd Branwen_potK OGS
Bedd Branwen_potE OGS
Bedd Branwen_potA OGS?
Bedd Branwen_potF OGS
Record: 1 of 15
No Filter
Search
Record: 143 of 285
No Filter
2088


Funerary database : Database (Access 2007 - 2010) - Microsoft Access
File
Home
Create
External Data
Database Tools
FRM_SITES
FRM_CONTEXTS
FRM_HR
CONTEXT
PRN 2088
Context ID Bedd Branwen_potL
Context_Type Pit
Disturbance Undisturbed
Location1 Peripheral
Location2 Primary
Diam/Lenght 0.40
Height/Depth 0.35
Width
Shape Circular
HR?
MNI
Pottery?
Animal Bones?
Flint?
Stone Artefacts?
Bronze?
Charcoal?
Charcoal Type
RC_Date 2136-1773 cal BC (3600±60 BP, GrA-19657)
Other
Note
Associated Human remains
HR number
Deposit Type
Burial Type
Age
Sex
Bedd Branwen_00
Cremation
Urned_Open_Upright
Associated Pottery
Pot number
Type
Decoration
Bedd Branwen_pot002
Collared Urn
Associated Animal Bones
Artefact ID
Species
Associated Flint
Artefact ID
Type
Bedd Branwen_flint2
2 pieces of waste flint.
Associated Stone Artefacts
Artefact ID
Description
Associated Bronze Artefacts
Artefact ID
Type
Bedd Branwen_bronzeawl
Bronze awl
Record: 1 of 1
Filtered
Search
Form View
Num Lock
Filtered


Funerary database : Database (Access 2007 - 2010) - Microsoft Access
File
Home
Create
External Data
Database Tools
View
Paste
Cut
Copy
Format Painter
Filter
Ascending
Descending
Remove Sort
Selection
Advanced
Toggle Filter
Refresh All
New
Save
Delete
Totals
Spelling
More
Find
Replace
Go To
Select
Views
Clipboard
Sort & Filter
Records
Find
Text Formatting
FRM_SITES
FRM_CONTEXTS
FRM_HR
Navigation Pane
Human Remains
PRN 2088
Context ID Bedd Branwen_potL
HR number Bedd Branwen_002
Deposit Type Cremation
Burial Type Urned_Open_Upright
Position N/A
Orientation N/A
Preservation
Peri-mortem modifications N/A
Post-mortem modifications N/A
Analysed
Associated Artefacts Early Collared Urn, Biconical Cup, bronze awl, bone pin (burnt)
Note
Weight_T 661.6
Weight_S 661.6
MFL 61
%10mm 38.3
%5mm 38.0
%2mm 23.7
%Skull 11.0
%Axial 2.9
%UL 4.6
%LL 8.6
%Unidentif 72.9
Colours V
Fractures L, ST, CT, D, P
MNI 1
Age Adult
Sex Indeterminate
Pathologies N/A
Record: 1 of 1
Filtered
Search
Form View
Num Lock
Filtered

Appendix F: Contextual and demographic data summary tables

MIDDLE NEOLITHIC (*c.* 3600-2900 BC)

ID No.	Deposit	Feature (size) [additional structure]	Deposit type	MNI, age, sex [bone report]	C14 dates (BP, code)	Associated artefacts
-	Bryn Celli Ddu central pit	Base of pit	Cremation (token)	1, non-adult [McKinley 2006]	-	2 pieces of jasper
-	Bryn Celli Ddu stone I	Stonehole	Cremation (token)	1, adult [McKinley 2006]	3498-3103 cal BC (4573±40 BP, UB-7116)	-
-	Bryn Celli Ddu stone J	Hollow 0.9m inside stone J	Cremation (token)	1, middle/older adult ??female [McKinley 2006]	3317-2898 cal BC (4384±46 BP, UB-7113)	-
-	Bryn Celli Ddu stone K	Beneath stone K	Cremation (token)	1, infant [McKinley 2006]	-	-
1	Bryn Gwyn	Pit cut in subsoil (0.5m)	Cremation	4, neonate, infant, child and adult	3019-2886 cal BC (4315±35BP, SUERC-39677)	
-	Four Crosses 5 Phase 1 burial pit	Pit cut in subsoil NNE-SSW (4.5 x 3.8m)	Crouched inhumations (decayed bones)	3, adult and two adolescent/adults [Warrilow *et al* 1986: 64]	3341-2921 cal BC (4440±70 BP, CAR-670)	Ebbsfleet bowl, pear-shaped stone, animal bones
2	Llandygai A252	Pit cut in subsoil (1.1 x 0.8m)	Cremation	1, young/middle adult ??female	3360-3013 cal BC (4480±50 BP, GrN-22954)	Axe-polisher and 2 sherds of cord-impressed Ware
3	Lower Luggy pit 5090	Pit cut in subsoil (0.6m)	Cremation	1, middle/older adult	3022-2706 cal BC (4280±45 BP, GrA-29332)	7 pieces of flint (6 burnt) and 1 piece of quartzite
-	Meusydd I timber circle burial 33	Placed against timber post (posthole 19)	Cremation	1, adult ?male [Coard 2009]	3017-2762 cal BC (4280±40 BP, Beta-249072)	-
-	Trelystan II burial 1	Pit cut in subsoil NE-SW (2.9 x 1.6m) [?wooden coffin]	No bone recovered	-	3331-2875 cal BC (4350±70 BP, CAR-282)	-
4	Trelystan II burial 1	Pit cut in subsoil NE-SW (2.9 x 1.6m)	Cremation	1, older adult ??female	3331-2875 cal BC (4350±70 BP, CAR-282)	Flint knife, 2 worked flints

LATE NEOLITHIC (*c.* 2900-2400 BC)

ID No.	Deposit	Feature	Deposit type	MNI, age, sex [bone report]	C14 dates (BP, code)	Associated artefacts
-	Barclodiad-y-Gawres S chamber	On ground surface (disturbed)	Cremation	1 [Lisowski 1956]	-	-
-	Barclodiad-y-Gawres E chamber	On ground surface (disturbed)	Cremation	1, adult [Lisowski 1956]	-	-
-	Barclodiad-y-Gawres W chamber	On ground surface	Cremation	2, adult ?male and adult ?male [Lisowski 1956]	-	-
-	Bryn Celli Ddu passage	Passage floor (disturbed)*	Cremation	2, adult and middle/older adult [McKinley 2006]	3095-2896 cal BC (4360±44 BP, UB-7115); 3314-2906 cal BC (4395±40 BP, UB-7117); 3324-2913 cal BC (4409±39 BP, UB-7114)	-
			Unburnt bone	1, young/middle adult [McKinley 2006]	-	-
-	Bryn Celli Ddu stone 29	Cavity behind stone	Cremation (token)	1, middle/older adult [McKinley 2006]	3086-2897 cal BC (4351±35 BP, UB-7118)	-
5	Sarn-y-bryn-caled site 2 cremation 1	Undercut in ditch base	Cremation	1, older adult ?female	3013-2888 cal BC (4315±30 BP, SUERC-24176)	Flint flake (burnt)
6	Sarn-y-bryn-caled site 2 cremation 2	In primary ditch silt	Cremation	1, young child	2918-2761 cal BC (4255±30 BP, SUERC-24172)	-
7	Sarn-y-bryn-caled site 2 cremation 3	In primary ditch silt	Cremation	1, young/middle adult	2875-2624 cal BC (4145±30 BP, SUERC-24171)	-
8	Sarn-y-bryn-caled site 2 cremation 4	In ditch silt (disturbed)	Cremation	1, adult	-	-

*19 individual bone deposits were recovered from the passage at Bryn Celli Ddu by Hemp (1930) (see Table 2 in Burrow (2010a: 256) for summary of contextual and osteological data); however, as these deposits came from badly disturbed contexts where mixing of the material may have occurred, the MNI from the cremated bones is two and the MNI for the unburnt bone deposits is one (Burrow 2010a: 254).

CHALCOLITHIC (*c.* 2500-2200 BC)

ID No.	Deposit	Feature (size)	Deposit type	MNI, age, sex	C14 dates (BP, code)	Beaker type*	Associated artefacts
9	Llantrithyd post pit 32	? (disturbed in antiquity)	Inhumation	1, adult	-	No Beaker recovered	Wristguard, bone pin
-	Penderyn	?	No bone recovered	-	-	LC Step 2 N/MR	?stone spindle-whorl
10	Sutton 268'	Inside stone setting in pit cut in subsoil N-S (2.5 x 0.6m)	Crouched inhumation	1, older adult male	-	LC Step 2 N/MR	7 barbed and tanged flint arrowheads, chert scraper

*typology based on the schemes by Needham (2005), Lanting and Van der Waals (1972) and Clarke (1970), in that order.

EARLY BRONZE AGE BEAKER BURIALS (*c.* 2200-1700 BC)

ID No.	Deposit	Feature (size) [additional structure]	Deposit type	MNI, age, sex [bone report]	C14 dates (BP, code)	Beaker type*	Associated artefacts
-	Aberbechan	?pit under large stone	No bone recovered	-	-	LN Step 5 N3(L)	-
-	Banc Troed-Rhiw-Seiri	Partially stone-lined pit cut in subsoil NW-SE (3.0 x 1.7m)	Inhumation (degraded bones)	1 [Houlder 1956]	-	LN Step 7 N?	2 barbed and tanged flint arrowheads, 1 flint flake
-	Bodtegir	Cist in subsoil (0.7 x 0.4m)	No bone recovered	-	-	LN Step 5 N3(L)	-
11	Brymbo	Cist in subsoil N-S (1.0 x 0.7m)	Crouched inhumation	1, middle adult male	-	LN Step 5 N2	Flint knife
-	Bwlch-y-gwrhyd, Caerhun	?stone-lined pit	No bone recovered	-	-	LN Step 5 S2(W)	-
-	Cwm Car, Dolygaer	Cist (0.7 x 0.5m)	Cremation (token)	1, adult [Ward 1902]	-	LN Step 6 S2(W)	Barbed and tanged flint arrowhead
-	Cyffig	Cist in subsoil E-W (0.8 x 0.5m)	No bone recovered	-	-	LN Step 6 S2(W)	-
-	Darowen	?	Inhumation (skull fragments)	Not analysed	-	LN Step 7 FP	2 flat-riveted bronze knives
-	Gray Hill	Pit cut in subsoil N-S (3.8 x 3.0m) [timber structure] (disturbed)	No bone recovered	-	-	? (sherds from 2 vessels)	7 flint barbed-and-tanged arrowheads
40	Groeswen	Cist NE-SW (1 x 0.6m)	Cremation (token)	1, adult	-	SN Step 4 BW	-
-	Hendre'r Gelli	?cist	No bone recovered	-	-	LN Step 6 S2(W)?	-

-	Llanbabo	?	?inhumation (1 skull fragment)	1, adult [Stanley and Way 1868]	-	LN Step 6 S3(W)	-
12	Llancaiach-isaf	Cist in subsoil	Inhumation	1, young child	-	SN Step 3 BW	Bronze 'ornaments' (lost)
-	Llanelwedd Rocks cairn 1	Cist partially in subsoil NE-SW (0.8 x 0.6m) (disturbed)	No bone recovered	-	-	? (sherd outside cist)	?flint barbed and tanged arrowhead
-	Llanelwedd Rocks cairn 2	Rock-cut pit N-S (3.2 x 2.2m) (disturbed) [?timber structure/dug-out coffin]	No bone recovered	-	2194-1954 cal BC (3680±35 BP, SUERC-24766); 2190-1946 cal BC (3670±35 BP, SUERC-24769); 2195-1939 cal BC (3670±40 BP, Beta-290090)	? (sherd in pit fill)	Flints (3 barbed and tanged arrowheads, core, 5 flakes, chip), chert flake, copper-alloy ?bracelet
-	Llanelltyd	?pit covered by stone slab	No bone recovered	-	-	LN Step 6 S2(W)	-
-	Llannon	Cist in subsoil N-S (1.5 x 0.9m)	No bone recovered	-	-	LN Step 6 S2(E)	3 flint flakes
13	Llithfaen	Cist in subsoil N-S (1.1 x 0.8m)	Crouched inhumation	1, young adult	-	LN Step 5 N2	-
-	Ludchurch	Cist in subsoil N-S (0.9m x 0.4m)	Inhumation	4, 2 non-adults, adult female and adult male [Grimes 1928]	-	SP Step 3 ?N/MR	-
-	Merddyn Gwyn grave No. 1	Cist in subsoil NNE-SSW	Crouched inhumation	1, adult male [Keith 1909]	-	LN Step 7 FP	Riveted bronze knife, V-perforated jet button, flint flake
-	Meusydd	Pit cut in subsoil N-S (3.0 x 1.6m)	No bone recovered	-	-	SP Step 3/4 W/MR	-
-	Moel Hebog	?	No bone recovered	-	-	LN Step 5 N3	-

-	?Mynydd Bach	Cist in subsoil (1.5 x 0.9m)	No bone recovered	-		?Beaker (sherds)	-
14	Naaboth's Vineyard	Cist in subsoil N-S (1.3 x 0.7m)	Crouched inhumation	1, middle adult male	-	LN Step 6 S2(W)	-
-	?Nant Maden	D-shaped stone structure	No bone recovered	-	TAQ 2008-1695 cal BC (3518±51 BP, BM-1113)	?	-
-	Pen Gloch-y-pibwr, Cwm-du	Cist in mound (0.6 x 0.6m)	No bone recovered	-	-	Handled LN Step 5 SH4(B)	-
-	Penarth	Cist in subsoil N-S (0.9 x 0.5m)	Inhumation	1, non-adult [Roberts 1910]	-	SN Step 3 N/NR	-
-	Plas Heaton	Cist on ground surface N-S (1.2 x 0.5m)	Crouched inhumation	1, adult male [Wynne-Ffoulkes 1851c]	-	LC Step 7 FP	-
-	Porth Dafarch II	Cist ?on ground surface (1.1 x 0.8m)	Crouched inhumation	1, adult female [Baynes1909: 329]	-	LN Step 5 S2(W)	Beaker sherds (from a 2nd Beaker)
-	Rhosbeirio	Cist in subsoil (1.1 x 1.1m)	Crouched inhumation	1 [Stanley and Way 1868]	-	LN Step 7 S2(W)	-
15	Riley's Tumulus C1	Pit in mound ?NNW-SSE	Crouched inhumation	1, middle adult male	-	LN Step 6 S3(E)	Flint knife
16	Riley's Tumulus C2	Pit in mound ?N-S [pillow stone]	Crouched inhumation	1, middle adult male	-	?	-
17	Riley's Tumulus C3	Pit in mound ?N-S	Crouched inhumation	1, older adult male	-	LN Step 6 S3(E)	-
18	Riversdale	Cist	Inhumation	1, older adult ?female	2830-2140 cal BC (OxA-3814)	LN Step 6 S2(W)	Bronze awl, flint flake
-	South Hill primary burial	Pit cut in bedrock NNE-SSW (1.8 x 0.5m)	No bone recovered	-	-	LC Step 7 N/MR	?unfinished barbed and tanged flint arrowhead

-	Tan-yr-allt, Tremadoc	Cist (0.4m square)	No bone recovered	-	-	LN Step 7 S3(W)	-
-	Tandderwen inhumation I	Pit cut in subsoil N-S (2.3 x 1.9m) [wooden coffin]	Crouched inhumation (skull fragments only)	1, adult [Brassil *et al* 1991]	-	LN Step 6 S3(E)	Flint knife
-	Tandderwen inhumation 2	Pit cut in subsoil N-S (1.7 x 1.2m) [wooden coffin]	No bone recovered	-	2195-1767 cal BC (3610±70 BP, CAR-1193)	WC Step 7 S2(E)	Flint knife
-	Twyn Bryn Glas (period II)	Cist on ground surface N-S	Inhumation (2 bone fragments)	1 [Webley 1962]	-	LN handled Step 5 SH?	-
-	Ty Du, Llanelieu	?	No bone recovered	-	-	LC Step 5 ?S2(W)	?ogival flint knife
19-20	Tynewydd, St Fagans	Pit cut in subsoil ?E-W covered by stone slab	Crouched inhumation	2, adolescent and middle adult	-	LN Step 6 S2(W)	Hammer pebble
21	Welsh St Donats 3 burial C	Stone setting on ground surface N-S	Crouched inhumation	1, young adult ?female	2109-1528 cal BC (3470±100 BP, BM-1681R)	LN Step 7 FP	Copper alloy awl, flint flake, ox tooth
41	Ysgwennant pit 1	Pit cut in subsoil N-S (1.5 x 1.0m)	Cremation (token)	1, young child	1936-1528 cal BC (3423±82 BP, Birm-85)	LN Step 6 S2(W)	-
-	Ysgwennant pit 2	Pit cut in subsoil NE-SW (1.7 x 1.3m)	No bone recovered	-	-	LN Step 6 S2(W)	Flint knife, 2 jet pulley rings, 2 V-perforated jet buttons, 2 'sponge-finger' stones
22	Ystradfellte	Cist	Inhumation	1, adult	-	LN Step 7 BW	Plano-convex flint knife
42			Cremation (token)	1, adult			

*typology based on the schemes by Needham (2005), Lanting and Van der Waals (1972) and Clarke (1970), in that order.

EARLY BRONZE AGE INHUMATION BURIALS WITH FOOD VESSELS AND UNKNOWN VESSEL TYPES (*c.* 2200-1700 BC)

ID No.	Deposit	Feature (size)	Deposit type	MNI, age, sex (notes) [bone report]	C14 dates (BP, code)	Pottery type	Associated artefacts
43	Candleston Castle	Cist on ground surface N-S (1.5 x 0.4m)	Cremation (token)	1, adult ??male	2130-1893 cal BC (3630±35 BP, GrA-27615); 2118-1881 cal BC (3605±35 BP, GrA-27614)	Bowl Food Vessel	Bronze flat riveted dagger
-	Church Ways	Cist in mound (1.2 x 0.9m)	Inhumation	Not analysed	-	? (1 sherd)	Decorated stone (lost)
23	Frainslake	Cist in mound	Crouched inhumation	1*, middle adult female	-	?	-
-	Graig Ddu	Cist in mound E-W (disturbed)	?inhumation	Not analysed	-	?	-
-	Gwynyndy	Cist in subsoil	Inhumation	Not analysed	-	?	-
-	Hays II, Carew Beacon	Pit in mound E-W covered by stone slab	Inhumation (decayed bones)	1 [Dearden 1851]	-	? (lost)	1 ?bone bead, 1 barbed and tanged flint arrowhead
-	Linney Burrows	Cist in pit cut into bedrock NW-SE (1.0 x 0.6m)	Crouched inhumation (decayed bones)	1 [Gordon-Williams 1926]	-	Food Vessel Urn	2 flint flakes
-	Pen y Bonc	Pit cut in bedrock (*c.* 0.9m square) covered by stone slab	No bone recovered	-	-	2 ‘urns’ (lost)	2 bronze armlets (lost), lignite and jet necklace

*record of two crouched skeletons in a cist; only one cranium was deposited in Tenby Museum (the other bones were left in the cist) (Laws 1888: 29)

EARLY BRONZE AGE ACERAMIC INHUMATION BURIALS (*c.* 2200-1700 BC)

No.	Deposit	Feature (size) [additional structure]	Deposit type	MNI, age, sex (notes) [bone report]	C14 dates (BP, code)	Associated artefacts
-	Aber Camddwr II central pit	Stone setting in pit cut in subsoil ENE-WSW (2.1 x 1.1m) [timber post]	No bone recovered	-	-	-
-	Allt Cunedda (PRN 1394)	Pit cut in subsoil covered by stone slab	Extended inhumation	1 [Anon 1851]	-	-
-	Bedd Emlyn primary pit No. 1	Stone setting in pit cut in subsoil ENE-WSW (3.7 x 2.4m) [?tree trunk coffin]	No bone recovered	-	-	-
-	Bedd Emlyn primary pit No. 2	Pit cut in subsoil NE-SW (2.0 x 1.5m) [?wooden box/coffin]	No bone recovered	-	-	Flint knife
24	Bier Hill	?	Inhumation	1, adult	-	4 flints (inc. 2 flakes), animal tooth
-	Brecon Grammar School	Cist in subsoil N-S (1.3 x 1.1m)	Inhumation	1, adult [Savory 1971]	-	? (may have contained unrecorded artefacts)
-	Brenig 41	Pit cut in bedrock WNW-ESE (2.4 x 1.4m) (disturbed) [coffin/ plank floor]	Inhumation (decayed bones)	Too small for identification [Keepax and O'Connor 1993]	-	-
-	Buttington Cross pit 522	Pit cut in subsoil (1.8 x 0.9m) N-S	No bone recovered	-	-	-
-	?Caer Euni I central feature	Earth platform on ground surface NNW-SSE (1.3 x 0.8m) surrounded by ditch [2 ?split-tree trunks]	No bone recovered	-	-	-
-	?Carneddau I cist 1	Cist in subsoil NW-SE (1.2 x 0.3m)	No bone recovered	-	-	
-	?Carneddau I cist 3	Cist in subsoil (0.9 x 0.6m)	No bone recovered	-	-	-
-	?Carneddau I cist 4	Cist in subsoil (0.7 x 0.4m)	No bone recovered	-	-	-
-	Castle Lloyd	Cist in pit cut into bedrock N-S (1.4 x 0.8m)	No bone recovered	-	-	
-	Cefn Bryn	Stone setting in pit cut in subsoil (2.0 x 0.9m) [wooden plank]	Inhumation (decayed bones)	Not analysed	-	-
-	Cefn-Goleu (central grave)	Stone setting in pit cut in subsoil NNW-SSE (1.9 x 1.2m)	No bone recovered	-	-	-
-	Corston Beacon	Cist in subsoil N-S (1.8 x 0.8m) [pillow stone]	Extended inhumation	1, adult male [Fox and Grimes 1928]	-	Bronze dagger

-	Coygan	Cist ?N-S (1.4 x 0.8m)	Crouched inhumation	1, adult male [Curtis 1880: 136]	-	-
-	Crown Farm (cist 1)	Cist in mound (*c.* 0.3m wide)	Disarticulated inhumation	2, non-adults [Davies 1929a]	-	Flint scraper
-	Crown Farm (cist 2)	Cist in mound	Disarticulated inhumation		-	-
-	Disgwylfa Fawr	Pit in mound NW-SE [hollowed tree trunk]	No bone recovered	-	2561-2136 cal BC (3860±70 BP, HAR-2187)	-
-	Ffridd y Garreg Wen burial D	Cist in mound (0.4 x 0.3m)	Disarticulated inhumation	1, adult male [Williams 1921]	-	?copper-alloy object
-	Four Crosses 1 central pit	Pit cut in subsoil NE-SW (2.2 x1.2m) [timber post and stake setting]	No bone recovered	-	1903-1533 cal BC [3420±70 BP, CAR-666]	-
-	Four Crosses 2 grave I	Pit cut in subsoil NW-SE (3.0 x 1.5m)	No bone recovered	-	-	-
-	Four Crosses 5 phase 2 grave	Pit cut in subsoil NNE-SSW (2.5 x 1.3m) [wooden coffin]	Extended inhumation (decayed bones)	1 [Warrilow *et al* 1986]	-	V-perforated jet button
-	?Four Crosses 6	Pit cut in subsoil ENE-WSW (1.2 x 0.8m)	No bone recovered	-	-	-
25	Friars Point 5	?	Inhumation	1, older adult female	-	-
-	Hendre	Shallow pit/scoop cut in subsoil (0.5 x 0.5m)	Disarticulated/ fragmented bone	4, young child, young/older child, older child and middle/older adult male [Brassil and Gibson 1999]	1900-1691 cal BC (3480±80 BP, BM-2922)	-
-	?Hengwm S (central pit)	Pit cut in subsoil	No bone recovered	-	-	-
-	Llong	Shallow pit cut in subsoil	Crouched inhumation	1, adult ?female [Lynch 1983]	-	-
-	Lower Luggy pit 5100	Pit in subsoil NW-SE (2.9 x 1.8m) [?head support stones]	No bone recovered	-	-	Flint knife
-	Mold, Bryn-yr-ellyllon	Cist	Inhumation	1, adult male [Davies 1949: 256]	-	Gold cape, amber beads, ?pottery vessel
-	Nant Maden	Pit (1.5 x 0.8m)	No bone recovered	-	-	-
26	Norchard Beacon	Cist	Extended inhumation	1, adult	-	-
27	Orseddwen	Pit cut in bedrock NE-SW	Extended inhumation	1, middle adult ?male	-	Riveted bronze dagger
28	Pant-y-Butler barrow 2 burial 3	Pit in mound NW-SE (3.0 x 1.3m)	Disarticulated inhumation	1, adult	2192-1952 cal BC (3675±35 BP, SUERC-36628)	Jet necklace

29	Pant-y-Dulath	Pit cut in subsoil N-S [hollowed tree trunk]	Inhumation	1, young child	-	-
-	?Parc Maen hollow 643	Pit cut in subsoil NW-SE (2.8 x 2.2m)	No bone recovered	-	-	-
-	?Pen-y-Cloddiau	Pit cut in bedrock NW-SE (3.0 x 1.7m)	No bone recovered	-	-	-
-	Plas Heaton	On cover stone of cist	Crouched inhumation	2 [Wynne-Ffoulkes 1851c]	-	-
-	Plas Heaton	?pit in mound (S of cist)	Crouched inhumation	1, adult ?male [Wynne-Ffoulkes 1851c]	-	-
-	Porth Dafarch I	Cist on ground surface (disturbed)	Inhumation	Not analysed	-	-
30	Pwll Swil B1	Cist on ground surface N-S (1.2 x 0.7m)	Crouched inhumation	1, middle adult male	-	-
31	Pwll Swil B2	Cist on ground surface N-S	Crouched inhumation	1, adolescent	-	-
32	Pwll Swil B3	Cist on ground surface N-S	Crouched inhumation	1, adult	-	-
33	Pwll Swil B4	Cist on ground surface N-S (0.6 x 0.4m)	Crouched inhumation	1, older child	-	-
34	Riley's Tumulus C4	Cist on ground surface ?N-S (0.9m in diameter) [pillow stone]	Crouched inhumation	1, older adult male	-	-
35-36	Riley's Tumulus C5	Cist on ground surface ?N-S (0.8 x 0.5m)	Crouched inhumation	2, 2 young children	-	-
-	Roberts's Cist	Cist (0.5 x 0.3m)	Crouched inhumation	1, non-adult [Savory 1959]	-	-
-	Stormy Down, Pyle	Cist in hollow cut in bedrock NNE-SSW (1.2 x 0.8m)	Crouched inhumation	1, adult male [Grimes 1928]	-	Flint flake
-	Sutton 268'	Pit at foot of E horn of central cairn	Inhumation	1, non-adult [Cowley 1943]	-	-
-	Sutton 268'	In satellite cairn near cremation E	Inhumation (skull only)	1, adult ?male [Cowley 1943)	-	-
-	Trwyn Du	Pit NW-SE (2.0 x 1.0m)	No bone recovered	-	-	-
-	Twyn Bryn Glas (period I)	Cist on ground surface	No bone recovered	-	-	-
-	Twyn y Beddau cist A	Cist in mound	?inhumation (skull only)	Not analysed	-	-
-	Twyn y Beddau cist B	Cist in mound	No bone recovered	-	-	-
-	Twyn y Beddau cist E	Cist in mound	? (large quantity of human teeth)	Not analysed	-	-
-	Ty'n-y-pwll	Stone setting in pit in subsoil NW-SE covered by stone slab	Crouched inhumation	1, adult male [Baynes 1909]	-	Flint knife

-	Tyddyn Bach	Cist	?inhumation	Not analysed	-	Bronze tanged spearhead, gold ring
-	Welsh St Donats 3 cist A	Cist in subsoil (1.2 x 0.6m) NE-SW	No bone recovered	-	-	-
37	Welsh St Donats 3 burial B	Stone setting on ground surface N-S	Crouched inhumation	1, older child	-	3 bovine teeth, ?stone bead
-	West Williamston	Cist built on top of inner cairn	No bone recovered	-	-	-
38	Whitmore Bay	Under boulders in sand E-W	Crouched inhumation	1, middle adult male		?copper-alloy object
-	?Ynys Hir central pit	Pit in subsoil NE-SW (1.8 x 0.8m)	No bone recovered	-	-	-
39	Ysceifiog	Pit in subsoil NE-SW (2.9 x 2.1m)	Extended inhumation	1, middle adult	-	-

EARLY BRONZE AGE CREMATIONS IN POTTERY VESSELS (*c.* 2200-1700 BC)

No.	Deposit	Feature (size) [additional structure]	Pottery type (position)	MNI, age, sex [bone report]	C14 dates (BP, code)	Associated artefacts
44	Afon Wen SF3	Pit cut in subsoil (0.3m)	Middle Collared Urn (inverted)	2, older adult male and older adult ?female	-	?copper-alloy object
45	Afon Wen SF4	Pit cut in subsoil (0.2m)	Food Vessel Urn (inverted)	2, adult male and older adult ?female	2141-1774 cal BC (3610±60 BP, Beta-210124)	?copper-alloy object
46	Allt y Garn	Natural hollow in bedrock	Early Collared Urn (inverted)	1, adult ??female	-	-
47	Bedd Branwen A	On ground surface (disturbed)	Collared Urn	1, adult	2113-1697 cal BC (3550±60 BP, GrA-19650)	-
48	Bedd Branwen B	On ground surface (disturbed)	Early Collared Urn (inverted)	1, older adult ??male	2026-1768 cal BC (3560±45 BP, GrA-19566)	Bone pommel (burnt), hone
49	Bedd Branwen C	Stone-lined pit cut in subsoil (0.5m)	Early Collared Urn (inverted)	1, young adult	2141-1774 cal BC (3610±60 BP, GrA-19643)	Jet bead, 2 flint flakes
50	Bedd Branwen D	On ground surface	Middle Collared Urn (inverted)	1, older child	2136-1773 cal BC (3600±60 BP, GrA-19642)	4 utilised flints (1 burnt)
51	Bedd Branwen E	On ground surface	Food Vessel Urn (upright)	1, infant/young child	-	-
52	Bedd Branwen F	On ground surface (disturbed)	Early Collared Urn (inverted)	1	-	-
53	Bedd Branwen H	Cist in subsoil (0.5 x 0.4m)	Middle Collared Urn (inverted)	3, infant, adult and adult ??male	2032-1696 cal BC (3540±60 BP, GrA-19652)	Bone bead (burnt), bone pommel (burnt), 6 amber beads, 4 jet beads
54	Bedd Branwen J	Pit cut in subsoil (0.3m)	Early Collared Urn (inverted)	1, infant/young child	-	-
55	Bedd Branwen L	Pit cut in subsoil (0.4m)	Early Collared Urn (upright)	1, adult	2136-1773 cal BC (3600±60 BP, GrA-19657)	Biconical Cup, bronze awl, bone pin (burnt)

56	Bedd Branwen M	Pit cut in subsoil (0.3m)	Early Collared Urn (upright)	1, infant/young child	-	-
57	Bedd Emlyn secondary pit No. 1	Pit cut in subsoil (0.6 x 0.5m)	Food Vessel Urn (inverted)	1	-	Bronze tweezers
58	Bedd Emlyn secondary pit No. 3	Pit cut in fill of primary pit No. 1	Food Vessel Urn (inverted)	2, young child and adolescent/adult		11 barbed and tanged arrowheads (burnt), plano-convex flint knife (burnt)
59	Bier Hill	?	? (urn lost)	1, adult	-	-
-	Bishopston Burch	Pit cut in subsoil (1.8 x 1.5m)	Middle Collared Urn (inverted)	1, non-adult [Williams 1945]	-	-
-	Blaen Nedd Isaf	In mound	Food Vessel Urn	Not analysed	-	-
-	Blaen-y-cae pit 6	Pit cut in subsoil (0.3m)	Middle Collared Urn (upright)	1, adolescent/adult [Wysocki 2006]	2127-1746 cal BC (3570±60 BP, Beta-186978)	-
60	Braich Llwyd (cremation 1)	?	Middle Collared Urn (inverted)	1, older child		Miniature Collared Cup
61	Braich Llwyd (cremation 2)	?	? (urn lost)	1, older adult	-	-
62	Brenig 40	Robber's pit [timber mortuary structure]	Early Collared Urn	2, young child and middle adult	2130-1773 cal BC (3590±50 BP, GrA-22964)	-
63	Brenig 44 F20A	Pit cut in subsoil covered by stone slabs	Middle Collared Urn (inverted)	2, young child and adult	-	-
64	Brenig 44 F20B		Middle Collared Urn (inverted)	3, infant, young child and young/middle adult	2024-1751 cal BC (3550±50 BP, GrA-22970)	Biconical Cup, 2 pottery 'ear-studs', plano-convex flint knife (burnt)
65	Brenig 45 cremation 1	Pit cut in subsoil (1.4 x 0.8m) [3 stakeholes outside pit]	? (urn lost)	1	2200-1664 cal BC (3570±100 BP, HAR-657)	-
-	Brenig 45 cremation 6	Pit in mound (0.5 x 0.4m)	Middle Collared Urn (inverted)	1, young adult ?male [Keepax and O'Connor 1993]	2194-1777 cal BC (3620±60 BP, HAR-712)	-
-	Brenig 45 cremation 7	Pit cut in fill of ditch (0.2m)	Middle Collared Urn (upright)	1, young child [Keepax and O'Connor 1993]	2286-1696 cal BC (3620±100 BP, HAR-1027)	-
66	Brenig 51 F7	Stone-lined pit cut in subsoil (0.6m)	Food Vessel Urn (inverted)	2, adult and older adult	1882-1628 cal BC (3430±50 BP, GrA-22792)	Bone pommel (burnt)

67	Bryn-bugeilyn	Cist in mound (0.5 x 0.4m)	Food Vessel Urn (inverted)	1, adult	-	Plano-convex flint knife
-	Brynford	Pit in mound	Food Vessel Urn (inverted)	2, non-adults [Davies 1949: 46]	-	2 faience beads
-	Bryn yr Hen Bobl (cremation 1)	On ground surface S end of terrace wall	Early Collared Urn (inverted)	No demographic data [Tildesley 1935]	-	-
68	Bwlch-y-Groes	?	Middle Collared Urn	1, infant/young child	-	Biconical Cup
-	Capel Cynon cist B	Cist in subsoil	?	Not analysed	-	Biconical Cup
-	Capel Cynon cist C	Cist in subsoil (*c.* 1.2 x 0.3m)	? (upright)	Not analysed	-	-
69	Capel Eithin C1	Pit cut in subsoil (0.3m)	Early Collared Urn (inverted)	2, older child and middle adult ?male	2141-1754 cal BC (3600±70 BP, CAR-450)	Copper-alloy pin
70	Capel Eithin C2	Pit cut in subsoil (disturbed)	Collared Urn (inverted)	1, adult	2195-1767 cal BC (3610±70 BP, CAR-448)	Lignite bead
71	Capel Eithin C3	Pit cut in subsoil (disturbed)	Middle Collared Urn (inverted)	1, middle adult ??female	-	-
72	Capel Eithin C4	Pit cut in subsoil (0.3m)	Late Collared Urn (inverted)	2, infant and adult ??female	-	-
73	Capel Eithin C5	Pit cut in subsoil (0.6m)	Middle Collared Urn (inverted)	1, young adult ?male	2436-1979 cal BC (3760±60 BP, CAR-453)	-
74	Capel Eithin C7	Pit cut in subsoil (disturbed)	? (upright)	2, young child and adult	-	-
75	Capel Eithin C8	Pit cut in subsoil (0.4m)	Late Collared Urn (inverted)	1, adult ??male	1502-1131 cal BC (3090±70 BP, CAR-456) (date too late for context?)	-
76	Capel Eithin C9	Pit cut in subsoil (0.4m) covered by stone slab	Early Collared Urn (inverted)	1, adult	-	Flint flake
77	Capel Eithin C10	Pit cut in subsoil (0.4m)	Late Collared Urn (inverted)	1, older adult ??male	1882-1527 cal BC (3390±70 BP, CAR-449)	Bone point (burnt), flint knife, scraper and flake (burnt)
78	Capel Eithin C11	Pit cut in subsoil (0.3m)	Late Collared Urn (upright)	1, older adult ??female	2284-1882 cal BC (3670±70 BP, CAR-451)	-
79	Capel Eithin C12	Pit cut in subsoil (0.5m) with stones at base and top of pit	Collared Urn/Food Vessel Urn (inverted)	1, older child	2456-1978 cal BC (3760±70 BP, CAR-452)	Globular Cup, stone ‘stopper’
80	Capel Eithin C13	Stone-lined pit cut in subsoil	Early Collared Urn (inverted)	2, young child and middle adult ??male	-	-

81	Capel Eithin C16	Pit cut in subsoil (disturbed)	Collared Urn (upright)	2, young child and adult ?female	1891-1531 cal BC (3410±70 BP, CAR-482)	Bone/antler pin
-	Carnedd Howell	In cairn (disturbed)	Vase Food Vessel	Not analysed	-	-
82	Carneddau I cist 2	Cist in subsoil (0.7m)	Early Collared Urn (inverted)	1, older adult ??male	1908-1616 cal BC (3440±60 BP, CAR-1260)	-
83	Carneddau I cist 3	Cist in subsoil (0.9 x 0.6m)	Food Vessel (upright)	1	-	-
84	Carneddau I pit 25	Pit cut in subsoil (0.6m)	Late Collared Urn (inverted)	Too small for identification	1633-1295 cal BC (3200±70 BP, CAR-1255)	-
85	Carneddau II pit 16	Pit cut in subsoil (0.8 x 0.6m)	Late Collared Urn (upright)	1, young child	1879-1510 cal BC (3380±70 BP, CAR-1285)	-
86	Carneddau II pit 30	Pit cut in subsoil (0.4m)	Late Collared Urn (inverted)	1, older adult ?male	1922-1545 cal BC (3430±70 BP, CAR-1286)	Splayed Cup
87	Cefn Brafle	Pit cut in subsoil	Collared Urn	1, middle adult	-	-
88	Cefn Cwmwd F1007	Pit cut in subsoil (disturbed)	Food Vessel	1, young adult	-	-
89	Cefn Cwmwd F1008	Pit cut in subsoil (disturbed)	Collared Urn (inverted)	1, adult	-	-
90	Cefn Cwmwd F1009	Pit cut in subsoil (disturbed)	Late Collared Urn (inverted)	1, young child	-	Shale stud
91	Cefn Cwmwd F1010	Pit cut in subsoil (disturbed)	Middle Collared Urn (inverted)	1, older child	2132-1767 cal BC (3587±57 BP, Wk-9289)	Biconical Cup
92	Cefn Cwmwd F1014	Pit cut in subsoil	Early Collared Urn (inverted)	1, young adult ??male	1900-1533 cal BC (3420±69 BP, Wk-9288)	-
93	Cefn Cwmwd F1033	Pit cut in subsoil (disturbed)	Food Vessel Urn	1, older child	-	-
-	Cefn-Goleu cremation 2	Pit cut in subsoil	Middle Collared Urn (inverted)	1, non-adult [Fraser 1955]	-	-
-	Cefn-Goleu cremation 5	Pit cut in subsoil (0.5 x 0.3m)	Middle Collared Urn (upright)	1, adult ?male [Fraser 1955]	-	Bronze pin, bronze ?knife (burnt)
-	Cefn-Goleu cremation 7	Pit cut in subsoil	Middle Collared Urn (upright)	1, adult [Fraser 1955]	-	?copper-alloy object
-	Cefn-Goleu cremation 8	Pit cut in subsoil (0.3m)	Middle Collared Urn (inverted)	2, non-adult and adult ?female [Fraser 1955]		Biconical Cup, bone pin, ?copper-alloy object
-	Coed Bronfawr I (cremation 2)	?on ground surface	Collared Urn (inverted)	2, non-adult and ?adult [Stapleton 1908]	-	Flint flake (burnt)
94	Croesmihangel urn 1	Pit in mound (disturbed)	Middle Collared Urn (inverted)	2, child and adult	-	-

95	Croesmihangel urn 2	Stone-lined pit in mound	Late Collared Urn (inverted)	2, young child and adult	-	?copper-alloy object
96	Croesmihangel urn 3	Cist in mound	Late Collared Urn (inverted)	1, older adult	-	-
97	Croesmihangel urn 4	Stone-lined pit in mound (disturbed)	Middle Collared Urn (inverted)	1	-	-
98	Croesmihangel urn 5	Stone-lined pit in mound	Middle Collared Urn (upright)	2, young child and adult	-	Bone needle/pin, ?copper-alloy object
-	Cross Hands I cremation No. I	In stone ring on ground surface	Middle Collared Urn (inverted)	Not analysed	-	-
-	Cross Hands I cremation No. II	Pit in mound	Middle Collared Urn inside ?Middle Collared Urn (inverted)	Not analysed	-	-
-	Cross Hands II cremation No. I	Cist on ground surface (0.3m square)	Middle Collared Urn (inverted)	Not analysed	-	-
-	Cross Hands II cremation No. II	Pit in mound (disturbed)	Middle Collared Urn (inverted)	Not analysed	-	-
-	Disgwylfa Fawr	Pit in mound NE-SW (0.9 x 0.3m) [hollowed tree trunk]	Vase Food Vessel (upright)	Not analysed	1771-1414 cal BC (3300±80 BP, HAR-2677)	Flint blade
-	Dyffryn Saith	Pit cut in subsoil	Cordoned Urn	Not analysed	-	-
99	Druid's Circle primary cist	Cist in subsoil NE-SW (1.0 x 0.7m)	Food Vessel Urn (inverted)	1, older child	-	-
100	Druid's Circle secondary urn 1	Pit cut in subsoil covered by stone slab	Food Vessel Urn (inverted)	1, older child	-	Ogival bronze knife
-	Eglwysbach cremation 2	Cist in mound	Middle Collared Urn (inverted)	Not analysed	-	-
-	Eglwyseg I	Stone-lined pit (0.8m)	?	1 [Davies 1929b: 259]	-	?unrecorded finds
101	Fan cremation 5	Pit cut in subsoil	Middle Collared Urn (on its side)	1, older adult ?female	2029-1779 cal BC (3575±35 BP, SUERC-40798)	Bipartite Cup
102	Fan cremation 21	Pit cut in subsoil	Cordoned Urn (on its side)	1, adult	1926-1701 cal BC (3505±35 BP, SUERC-40800)	Miniature Bowl Food Vessel

103	Fan cremation 22	Pit cut in subsoil	Middle Collared Urn (inverted)	2, older child and middle adult	2031-1781 cal BC (3580±35 BP, SUERC-40801)	-
104	Fan Foel secondary cremation burial 1029	Amongst kerb stones	Collared Urn	1, young adult	2009-1751 cal BC (3540±40 BP, GrA-29945); 1941-1700 cal BC (3510±40 BP, GrA-29949)	-
-	Fan y Big	Pit	Cordoned Urn (upright) in Cordoned Urn (inverted)	1, young adult male [Wilkinson 1990]	-	Bronze ?razor, flint fragments (burnt)
-	Farm Yard urn 1	In mound	Food Vessel Urn (inverted)	Not analysed	-	-
-	Farm Yard urn 2	Cist (0.5 x 0.4m)	Food Vessel Urn (inverted)	Not analysed	-	-
105	Friars Point 5	On ground surface	Middle Collared Urn (inverted)	2, middle adult and older adult male	-	-
-	Ffridd y Garreg Wen burial A	Pit in mound (0.9m)	?	2, non-adult and adult [Williams 1921]	-	-
-	Ffridd y Garreg Wen burial E	In mound (disturbed)	?	No demographic data [Williams 1921]	-	-
-	Ffridd y Garreg Wen burial F	Pit in mound	Food Vessel Urn (upright)	2, adult female and adult male [Williams 1921]	-	Riveted bronze dagger, bronze pin, stone flake (burnt)
106	Gledlom Farm deposit Y101	Pit cut in subsoil	Collared Urn	2, infant and middle adult	-	-
107	Gledlom Farm deposit Y131	Pit cut in subsoil	Middle Collared Urn	3, infant, older child and young adult	-	Plano-convex flint knife (burnt)
108	Gledlom Farm deposit Y135	Pit cut in subsoil	Middle Collared Urn	2, young child and adolescent	-	-
-	Gloddaeth Farm	Cist (1.5 x 0.8m)	Food Vessel (inverted)	Not analysed	-	-
109	Holt	On ground surface	Early Collared Urn (inverted)	3, young child, adult ?male and adult ??female	-	-
110	Jacket's Well primary burial	Pit cut in subsoil (0.4m)	Early Collared Urn (inverted)	2, adolescent and older adult ??female	-	?copper-alloy object
111	Letterston II primary burial	Stone-lined pit cut in subsoil (0.7m)	Middle Collared Urn (inverted)	2, older child and adult ??female	-	Plano-convex flint knife
-	Letterston II secondary No. 1	Cist in mound	Middle Collared Urn (inverted)	Too fragmented for analysis [Cowley 1948]	-	-
-	Letterston II secondary No. 2	Cist in mound	Middle Collared Urn (inverted)	Too fragmented for analysis [Cowley 1948]	-	Biconical Cup

-	Letterston II secondary No. 3	Cist in mound	Middle Collared Urn (inverted)	Too fragmented for analysis [Cowley 1948]	-	-
-	Letterston III	?pit (disturbed)	?Food Vessel Urn	Not analysed	-	-
112	Llanfihangel	Cist	Middle collared Urn (inverted)	1, middle adult	-	Bronze awl
113	Llangynidr	Cist in ground (0.7 x 0.4m)	Late Collared Urn (upright)	3, young child, adolescent and middle adult	-	Flint flake (burnt), ?copper-alloy object
-	Llanilar burial No. 1	Pit cut in subsoil (disturbed)	?	1, adult [Benson *et al* 1982]	-	-
-	Llanilar burial No. 2	Pit cut in subsoil	Food Vessel Urn (inverted)	2, older child and adolescent [Benson *et al* 1982]	-	Bronze awl/razor
114	Llanmaes (PRN 2934s)	Pit cut in bedrock N-S (5.0 x 1.3m) (disturbed)	?Food Vessel	2, young child and older adult	2136-1956 cal BC (3665±30 BP, UBA-16269)	-
-	Llanrhaeadr	?	Middle Collared Urn	1, young adult [Lynch 1977]	-	-
115	Llanymynech cist 1135	Cist in subsoil (0.5 x 0.4m)	Early Collared Urn (inverted)	2, young child and adult	1880-1688 cal BC (3450±30 BP, SUERC-18873)	?copper-alloy object
-	Maen Llwyd	Pit cut in subsoil	Food Vessel Urn	Not analysed	-	-
116	Maes y Barcer	?	Vase Food Vessel (inverted)	1	-	-
117	Marian Bach	?	Early Collared Urn	2, young child and adult ??female	-	Bone pommel (burnt)
118	Marlborough Grange CIII	Pit in mound	?	1, adult	-	-
-	Merddyn Gwyn, Pentraeth urn 1	OGS	Food Vessel Urn (inverted)	1, adult female [Hughes 1908]	-	Bone pommel
119	Moel Ferna	?	Bowl Food Vessel	1, young adult	-	-
-	Moel Goedog I F8	Pit cut in bedrock (0.6 x 0.6m)	Food Vessel Urn (inverted)	1, young adult [O'Connor 1984]	2020-1645 cal BC (3500±70 BP, CAR-160)	-
-	Moel Goedog I F10	Pit cut in subsoil (0.4 x 0.3m)	Early Collared Urn	1, young adult [O'Connor 1984]	2205-1776 cal BC (3640±70 BP, CAR-165)	Waste flint
-	Mount Pleasant (?) primary burial	Pit cut in subsoil (disturbed)	?Early Collared Urn (inverted)	No demographic data [Savory 1952]	-	-
-	Mynydd y Bryn	Cist	LC Beaker Step 4 W/MR (inverted)	Not analysed	-	-
-	Nant Maden (cremation 1)	In mound (dist)	?	Not analysed	-	-

-	Nant Maden (cremation 2)	In mound (disturbed)	?	Not analysed	-	-
-	Nant Maden (cremation 3)	In mound (disturbed)	?	Not analysed	-	-
-	Nant Maden (cremation 4)	In mound (disturbed)	?	Not analysed	-	-
-	Nolais primary burial	On ground surface	?	Not analysed	-	-
-	Nolais secondary burial	Pit in mound	?	Not analysed	-	-
120	Pant-y-Dulath (cremation 1)	Hollow in pavement around grave pit	Food Vessel Urn (inverted)	1, adult	-	-
121	Pant-y-Dulath (cremation 2)	Pit in mound	Collared Urn	2, young child and middle/older adult	-	-
-	Pen-y-Glogau J	Pit (0.3m) cut in subsoil	Middle Collared Urn (on its side)	No demographic data [Jones and Davies 1930]	-	Flint scraper
122	Penllwyn	Cist in subsoil	Food Vessel Urn (upright)	2, young adult and older adult ??female	-	?copper-alloy object
-	Plas Heaton	Pit in mound	Beaker	Not analysed	-	-
-	Pleasant View secondary burial	Cist on ground surface	Middle Collared Urn (inverted)	Not analysed	-	-
-	Pond Cairn urn burial	On ground surface under small cairn	Early Collared Urn (upright)	1, adult [Cowley 1938]	1956-1691 cal BC (3506±51 BP, BM-1111)	-
123	Pont Glan Rhydw	Stone-lined pit cut in subsoil (disturbed)	?	1, older adult male		Riveted bronze dagger
-	Porth Dafarch I	Pit in mound	Early Collared Urn (inverted)	1, adult female [Stanley and Way 1868]	-	Bronze rivet
-			Miniature Vase Food Vessel (upright)	1, non-adult [Stanley and Way 1868]	-	-
-	Porth Dafarch I	Pit in mound	? (inverted)	Not analysed	-	Biconical Cup
124	Rhiw	Cist in subsoil	Early Collared Urn	1, older adult	-	Bronze awl, bone pommel (burnt)
-	Rhuddlan	Pit cut in subsoil	Collared Urn	Not analysed	-	-
-	Ruabon Cist	Cist in subsoil	Food Vessel Urn (upright)	No demographic data [Davies 1929b: 392]	-	-
-	Sheeplays 293’ cremation A	Pit cut in subsoil (0.3m)	Early Collared Urn (upright)	1, non-adult [Cowley 1941]	-	Flint flake (burnt), bronze awl

-	Sheeplays 293' cremation E	Pit in mound	Cordoned Urn (upright)	1, non-adult [Cowley 1941]	-	-
125	Simondston A1	Cist on bedrock NE-SW (1.0 x 0.8m)	Food Vessel Urn (inverted)	2, older child and older adult	-	Ogival flint knife
126	Simondston A2		Food Vessel Urn (inverted)	3, young child, adolescent and adult	2197-1782 cal BC (3630±60 BP, GrA-19966)	Flint fabricator, marcasite 'cup'
127	Simondston B1	Pit cut in bedrock with 2 orthostats	Middle Collared Urn (inverted)	2, child and middle adult	2028-1786 cal BC (3580±60 BP, GrA-19967)	-
-	South Hill secondary burial	Pit in mound covered by stone slabs	Middle Collared Urn (upright)	1, adult [Fox 1942]	-	Middle Collared Urn, Globular Cup, bronze blade
128	Staylittle	Pit in mound	Early Collared Urn (inverted)	1, young adult ??female	-	-
-	Steynton pit 268004	Pit cut in subsoil	Miniature Collared Urn (upright)	1, infant [Fotaki and Holst 2014]	-	Mesolithic/Early Neolithic blade core
-	Steynton pit 268009	Pit cut in subsoil	Early Collared Urn (upright)	2, non-adult and adult [Fotaki and Holst 2014]	-	-
-	Steynton pit 268113	Pit cut in subsoil	Late Collared Urn (inverted)	2, young children [Fotaki and Holst 2014]	1884-1695 cal BC (3470±29 BP, SUERC-54669); 1869-1630 cal BC (3416±29 BP, SUERC-54668)	-
-	Steynton pit 268126	Pit cut in subsoil	Late Collared Urn (on its side)	2, non-adult and adult [Fotaki and Holst 2014]	2115-1896 cal BC (3619±29 BP, SUERC-54679); 1888-1700 cal BC (3484±29 BP, SUERC-54680); 1881-1693 cal BC (3462±29 BP, SUERC-54681)	-
-	Steynton pit 268142	Pit cut in subsoil	Collared Urn (upright)	1, young child [Fotaki and Holst 2014]	-	-
-	Steynton pit 268147	Pit cut in subsoil	Early Collared Urn (inverted)	2, infant and middle/older adult [Fotaki and Holst 2014]	1928-1756 cal BC (3522±29 BP, SUERC-54671); 1888-1700 cal BC (3484±29 BP, SUERC-54670)	-

-	Steynton pit 268157	Pit cut in subsoil	Early Collared Urn (inverted) onto Vase Food Vessel (upright)	5, infant, 2 children, adolescent and middle/older adult [Fotaki and Holst 2014]	2031-1891 cal BC (3605±29 BP, SUERC-54672); 1887-1697 cal BC (3478±29 BP, SUERC-54673)	-
-	Steynton pit 268172	Pit cut in subsoil	Early Collared Urn (upright)	1 [Fotaki and Holst 2014]	2025-1884 cal BC (3588±29 BP, SUERC-54678); 1973-1772 cal BC (3549±29 BP, SUERC-54674)	-
-	Steynton pit 268177	Pit cut in subsoil	Vase Food Vessel (inverted)	2, young child and adolescent [Fotaki and Holst 2014]	2135-1941 cal BC (3651±29 BP, SUERC-54663)	-
-	Sutton 268' cremation B	Shallow pit W horn of cairn	Middle Collared Urn (inverted)	2, non-adult and adult female [Cowley 1943]	-	3 flint flakes
-	Sutton 268' cremation C	Shallow hole in ground under mound	Middle Collared Urn (inverted)	1, non-adult [Cowley 1943]	-	Worked bone object, barbed-and-tanged flint arrowhead, plano-convex flint knife
-	Tafarn Diflas I	On ground surface	?	Not analysed	-	-
-	Tandderwen cremation 2	Pit cut in subsoil (0.8m) (disturbed)	Food Vessel Urn (inverted)	3, young child, adolescent and older adult male [Brassil *et al* 1991]	-	-
-	Tandderwen cremation 5	Pit cut in subsoil NW-SE (1.2 x 0.3m) (disturbed)	Vase Food Vessel (upright) (with cremated bones) in Food Vessel Urn (inverted)	1, infant [Brassil *et al* 1991]	-	-
-	Tandderwen cremation 9	Pit cut in subsoil (1.4 x 1.1m) (disturbed)	Food Vessel Urn (inverted)	1, young child [Brassil *et al* 1991]	-	-
129	Treiorwerth pot 1	In mound	Middle Collared Urn (upright)	2, older child and middle adult ??male	2010-1667 cal BC (3500±60 BP, GrA-19653)	-
130	Treiorwerth pot 2	Pit in mound (disturbed)	Collared Urn (inverted)	1	1926-1692 cal BC (3490±45 BP, GrA-19567)	
131	Treiorwerth pot 4	Pit in mound (disturbed)	? (upright)	1	2200-1831 cal BC (3640±60 BP, GrA-19662)	-
132	Treiorwerth pot 6	Pit in subsoil and bedrock	Food Vessel Urn (inverted)	1, young child	2010-1667 cal BC (3500±60 BP, GrA-19663)	-

133	Trelystan I burial 3	Stone-lined pit cut in bedrock (0.6m) (disturbed)	Vase Food Vessel	1, young child	-	Food Vessel (sherd), flint scraper
134	Trelystan I burial 4	Stone-lined pit cut in bedrock (0.6m)	Food Vessel Urn (upright)	2, adult ?female and middle/older male	2273-1781 cal BC (3650±70 BP, CAR-280)	Flint object
135	Trelystan I burial 6	Pit in mound (disturbed)	Food Vessel Urn	1, adult	-	-
136	Trelystan I burial 7	Pit in mound (disturbed)	Food Vessel Urn	1, adult	-	Plano-convex flint knife
137	Trelystan II burial 3	Pit in inner turf mound (0.3m)	Food Vessel Urn (inverted)	1, middle/older adult ?male	2113-1697 cal BC (3550±60 BP, CAR-283)	-
-	Two Tumps East	Pit cut in bedrock	?	Not analysed	-	-
-	Ty'n-y-pwll urn 1	In mound	? (upright)	Not analysed	-	
-	Ty'n-y-pwll urn 2	In mound	? (upright)	Not analysed	-	Bronze blade, bronze ?bracelet (burnt)
-	Ty'n-y-pwll urn 3	Cist in mound	? (upright)	Not analysed	-	
-	Ty'n-y-pwll urn 4	Cist in mound	Cordoned Urn (upright)	Not analysed	-	Bronze ?pin (burnt)
-	Ty'n-y-pwll urn 5	In mound	Cordoned Urn (inverted)	1, adult [Baynes 1909]	-	-
-	Ty'n-y-pwll urn 6	In mound	Cordoned Urn (inverted)	Not analysed	-	Bronze razor-knife (burnt)
-	Ty'n-y-pwll urn 7	Cist in mound	Early Collared Urn (inverted)	1 [Baynes 1909]	-	Bronze axe (burnt), bronze chisel, bronze knife-dagger, antler ?pin
138	Tywyn	?	Middle Collared Urn	1, young child	-	-
139	Welsh St Donats 1	Pit cut in subsoil	Middle Collared Urn (upright)	2, young child and middle adult ??male		Flint knife, ring-headed bone pin
140	Welsh St Donats 2 primary burial	On ground surface	Vase Food Vessel (upright)	1, infant	-	
-	Welsh St Donats 2 ?secondary burial	In cairn material (disturbed)	Food Vessel	Not analysed	-	?plano-convex flint knife

141	Welsh St Donats 3 burial 5	Pit under satellite cairn (disturbed)	? (upright)	2, infant and older adult	-	-
142	West Williamston secondary No. 1	In mound	Middle Collared Urn	1, adult	-	-
-	West Williamston secondary No. 2	In mound	Food Vessel Urn	Not analysed	-	-
143	Ysceifiog CI	In inner cairn	Cordoned Urn (upright)	1, older adult ?male		?copper-alloy object
144	Ysgwennant No. 19	Pit cut in subsoil	Collared Urn (inverted)	1, older adult ?female	-	-
-	Ystrad Fawr	Cist near ground surface (0.6m square)	Middle Collared Urn (inverted) and Food Vessel Urn	1, non-adult [Davies 1929b: 277]	-	2 faience beads

EARLY BRONZE AGE CREMATIONS ACCOMPANIED BY POTTERY VESSELS (*c.* 2200-1700 BC)

ID No.	Deposit	Feature (size)	Pottery type	MNI, age, sex [bone report]	C14 dates (BP, code)	Associated artefacts
-	Banc Troed-Rhiw-Seiri	Pit cut into central grave N-S (1.4 x 0.8m)	Splayed Cup	Not analysed	-	-
145	Breach Farm	Pit cut in bedrock (0.9m)	Biconical Cup	3, adolescent, adult and older adult male	1971-1701 cal BC (3520±60 BP, GrA-19964 and 3530±60 BP, GrA-20601)	13 barbed and tanged flint arrowheads, 2 arrowshaft straighteners, 2 bronze flanged axes
-	Capel Cynon cist A	Cist in ground	Biconical Cup	Not analysed	-	-
146	Carneddau I cist 1	Cist in subsoil NW-SE (1.2 x 0.3m)	Collared Urn	1, adult	2141-1754 cal BC (3600±70 BP, CAR-1257)	Flint flake (burnt)
147	Cefn Cwmwd F1012	Pit cut in subsoil (disturbed)	Sherds from 2 Collared Urns	1, adult	-	-
-	Cloddfa Goch	Cist in subsoil (0.9 x 0.6m) (disturbed)	Miniature Bowl Food Vessel	Not analysed	-	-
148	Fan cremation 7	Stone-lined pit cut in subsoil	Biconical Cup	1, older adult female	2131-1896 cal BC (3630±35 BP, SUERC-40799)	Copper and bronze objects
149	Fan cremation 36	Pit cut in subsoil	Miniature Vase Food Vessel	3, infant, older child and middle/older adult	2125-1890 cal BC (3620±35 BP, SUERC-40802)	-
150	Fan Foel cist cremation burial	Cist in subsoil NW-SE (2.0 x 1.1m)	Food Vessel	3, infant, young child and older adult ??female	2140-1916 cal BC (3650±40 BP, GrA-29950); 2135-1896 cal BC (3635±40 BP, GrA-29963)	Flint knife, copper-alloy object
-	Flagstaff Quarry	?	Globular Cup, Bipartite Cup	Not analysed	-	Perforated bone object (?pin) (lost)
-	Linney Burrows	Pit cut in bedrock (1.1 x 0.9m) (disturbed)	?	Not analysed	-	-
151	Llanmaes (PRN 2933s)	Pit cut in bedrock	Pygmy Cup, ?cordoned urn sherds	2, young child and middle adult ??female	-	Gold bead/clasp, jet bead
152	Maesymynan	Pit in natural mound	Globular Cup	2, older child and adult	-	-

153	Marlborough Grange CI	On slope of primary mound	Miniature Vase Food Vessel	2, older child and adult	-	-
-	Merthyr Mawr Warren	In sand dunes	SP Beaker Step 3 S(?)*	Not analysed	-	-
-	Mount Pleasant (?) secondary burial	Pit in ground NW-SE (0.7 x 0.6m) covered by flat stone slab	Collared Urn (sherds)	No demographic data [Savory 1952]	-	-
154	Pant-y-Butler barrow 1 burial 2	Pit	?	1, adult	-	-
-	Pen y Bont central deposit	On ground surface	Food Vessel Urn	Not analysed	-	Flint flake, 2 shale ?hammerstones
-	Pen-y-Glogau I	Pit cut in subsoil (0.4m)	Miniature Collared Urn	Not analysed	-	-
-	Pentwynglas	Cist	Vertical-sided Cup	Not analysed	-	-
155	Sarn-y-bryn-caled 1 cremation 2	In fill of pit cut in subsoil (1.7 x 1.2m)	Miniature Vase Food Vessel	1, young/middle adult	2009-1766 cal BC (3545±35 BP, SUERC-27589)	-
-	Sutton 268' cremation A	Pit at base of central cairn	Biconical Cup	1, adult ?male [Cowley 1943]	-	Bone bead, bronze knife
156	Trelystan II burial 2	Stone-lined pit cut in bedrock WNW-ESE (1.3 x 0.7m)	Vase Food Vessel (inverted)	1, adult	TPQ 2126-1693 cal BC (3550±70 BP, CAR-390)	-
-	Twyn Bryn Glas (period III)	Cist on ground surface	Globular Cup	Not analysed	-	-
-	Ynys Hir outer burial	Pit cut in subsoil (0.3m) covered by stone slab	Splayed Cup	1 non-adult [Dunning 1943]	-	Flint knife (burnt), flint flake (burnt), anthracite bead, clay bead, piece of woven material (wool?) (burnt)

*typology based on the schemes by Needham (2005), Lanting and Van der Waals (1972) and Clarke (1970), in that order.

EARLY BRONZE AGE ACERAMIC CREMATIONS (*c.* 2200-1700 BC)

ID No.	Deposit	Feature (size) [additional structure]	MNI, age, sex [bone report]	C14 dates (BP, code)	Associated artefacts
-	Aber Camddwr I pit 2 burial	Pit cut in subsoil (0.6m) [wooden plank/tray]	1, child [Hogg 1977]	-	-
-	Allt Cunedda (PRN 1393)	Pit	Not analysed	-	-
157	Allt Llwyd	Cist NNW-SSE (0.8 x 0.4m)	1, adult	-	-
158	Bedd Branwen stonehole	In fill of stonehole next to standing stone	1, adult	-	-
159	Bedd Emlyn secondary pit No. 2	Pit cut in subsoil (0.3 x 0.2m) on edge of primary pit No. 1	1, adult	-	Flint blade (burnt), flint knife (fragment)
160	Bedd Emlyn secondary pit No. 4	Pit	1	-	-
161	Bedd y Brenin	Cist on ground surface (0.7 x 0.5m)	1, adult	-	-
-	Blaen-y-cae pit 2	Pit cut in subsoil (0.5m)	Too small for identification [Wysocki 2006]	1923-1630 cal BC (3460±60 BP, Beta-186976)	-
-	Blaen-y-cae pit 7	Pit cut in subsoil (0.2m)	1, middle adult [Wysocki 2006]	-	-
-	Blaen-y-cae pit 9	Pit cut in subsoil (0.2m)	Too small for identification [Wysocki 2006]	-	-
-	Blaen-y-cae pit 11	Pit cut in subsoil (0.3m)	Too small for identification [Wysocki 2006]	-	-
-	Brenig 8	Pit cut in bedrock N-S (2.9 x 1.7m)	1, ?non-adult [Keepax and O'Connor 1993]	-	-
162	Brenig 44 F43	Pit cut in subsoil (0.4m)	2, child and young adult	2133-1638 cal BC (3530±90 BP, HAR-535); 2012-1639 cal BC (3490±70 BP, HAR-500)	-
-	Brenig 45 cremation 2	Pit cut in mound and subsoil (0.8 x 0.5m)	1, adult ??female [Keepax and O'Connor 1993]	2032-1666 cal BC (3520±70 BP, HAR-714)	-
-	Brenig 45 cremation 3	Pit in mound (0.3m) partly covered by stone slab	1, older adult ??male [Keepax and O'Connor 1993]	-	-
-	Brenig 45 cremation 4	Pit in mound (0.6m)	1 [Keepax and O'Connor 1993]	-	-
-	Brenig 45 cremation 5	Pit in mound (0.4m)	1, adult [Keepax and O'Connor 1993]	-	Scrap of flint (burnt)
-	Brenig 46 F9	Cist on ground surface (0.5m square)	1, young child [Keepax and O'Connor 1993]	-	-

163	Brenig 51 F6	Pit cut in subsoil (0.3m) partly covered by stone slab	1, adolescent	-	Flint knife (burnt)
-	Bryn yr Hen Bobl (cremation 2)	Shallow depression in clay floor S end of stone terrace	No demographic data [Tildesley 1935]	-	-
-	Bryn yr Hen Bobl (cremation 3)	Shallow depression in clay floor S end of stone terrace	No demographic data [Tildesley 1935]	-	-
-	Bryn yr Hen Bobl (cremation 4)	Shallow depression in clay floor covered by stone S end of stone terrace	No demographic data [Tildesley 1935]	-	-
-	Buttington Cross pit 116	Pit cut in subsoil	2, young child and adolescent [Western 2013]	2100-1880 cal BC (3610±30 BP, SUERC-24309)	Worked bone pendant, stone pendant, flints (leaf-shaped plano-convex knife, ?fabricator, flakes, core, chip) (burnt), 2 flint flake knives
-	Caebetin Hill (cremation 1)	Pit in mound (0.5m)	1, adult ??female [Jerman 1932]	-	-
-	Caebetin Hill (cremation 2)	Pit in mound (0.1m)		-	-
-	Caebetin Hill (cremation 3)	Pit in mound (0.1m)		-	-
-	Caer Euni I	Scattered among basal stones over *c.* $1m^2$ area SE quadrant	1, adult [Lynch 1986]	-	-
164	Capel Eithin C17	Pit cut in subsoil (disturbed)	1, adult	-	-
165	Carneddau I central cairn	In cairn material	2, young child and middle adult	-	-
166	Carneddau I cist 5	Cist in subsoil (0.9 x 0.5m)	2, young child and older adult ?female	-	Plano-convex flint knife, large utilized flake
167	Carneddau I pit 20	Pit cut in subsoil (0.2m)	1	-	-
168	Carneddau I pit 21-23	Pit cut in subsoil (0.6m)	2, infant and middle/older adult	-	-
169	Carneddau I pit 32	Pit cut in subsoil (0.3m)	1	-	-
170	Carneddau I pit 36	Pit cut in subsoil (0.4m)	1, adult	-	-
171	Carneddau I satellite cairn	Pit cut in subsoil (0.8 x 0.6m)	1, middle adult	2113-1686 cal BC (3530±70 BP, CAR-1259)	-
172	Carneddau II pit 29	Pit cut in subsoil (0.8 x 0.6m)	2, young children	-	-
173	Cefn Cwmwd F1013	Pit cut in subsoil	1, adult ??male	-	Flint flake (burnt)
174	Cefn Cwmwd F1034	Pit cut in subsoil (disturbed)	2, young child and adult	-	Quoit-shaped faience bead (burnt), 2 flint flakes (burnt)
175	Cefn Cwmwd unstratified burial	Pit cut in subsoil	1, adolescent	-	-
176	Cefn-Goleu cremation 1	Pit cut in subsoil (0.1m) on edge of central grave pit covered by stone slabs	1, older child	-	Worked flint (burnt)

-	Cefn-Goleu cremation 3	Pit cut in subsoil (0.3m)	1, adult [Fraser 1955]	-	Barbed and tanged flint arrowhead, tip of 2nd barbed and tanged flint arrowhead
-	Cefn-Goleu cremation 4	Pit cut in subsoil (0.3m)	1, adult [Fraser 1955]	-	-
-	Cefn-Goleu cremation 6	Partly stone-lined pit cut in subsoil (0.8m) covered by stone slabs	1, adult [Fraser 1955]	-	-
-	Cefn-Goleu cremation 9	Shallow pit in ground (0.7 x 0.4m) covered by stone slabs	1, adult [Fraser 1955]	-	-
-	Cefn-Goleu cremation 10	On top of flat stone on ground surface	1, adult [Fraser 1955]	-	-
-	Cefn-Goleu cremation 11	Shallow pit cut in subsoil (0.4 x 0.3m) covered by stones	1, adult [Fraser 1955]	-	-
177	Cerrig y Cledd	?	1, older adult	-	Flint (lost)
-	Coed Bronfawr I (cremation 1)	Pit in inner stone cairn E-W (0.6 x 0.3m)	1 [Stapleton 1908]	-	-
-	Coed Shepherd	?	No demographic data [Stapleton 1909]	-	-
-	Coed yr Escob	Cist	Not analysed	-	-
178	Colts Hill	Shallow pit cut in subsoil (1.5 x 0.9m)	2, older child and young/ middle adult	-	-
-	Crick primary burial	Pit cut in subsoil (0.4m)	1, adult female [Savory 1940]	-	-
-	Crick secondary burial	Pit in mound (0.6m)	1, adult [Savory 1940]	-	Plano-convex knife (burnt), flint flake (burnt)
-	Crug Gynon	Pit covered by 2 flat stones	1, non-adult [Peate 1929]	-	-
-	Crug yr Afan	Cist	Not analysed	-	Riveted bronze dagger
-	Cwm Difwg IV	On ground surface [carbonised planks - pyre material?]	Not analysed	-	-
-	Drosgl A cist 1	Cist on bedrock N-S (disturbed)	1, adult [Spence 1985]	-	-
-	Drosgl B	Cist on bedrock N-S (0.9 x 0.7m) (disturbed)	1, young adult ?female [Spence 1985]	-	-
-	Druid's Circle secondary cremation 2A	Stone-lined pit (0.5m)	Too small for identification [Cornwall 1960]	-	-
-	Eglwysbach cremation 1	On ground surface	Not analysed	-	-
-	Eglwysbach cremation 3	Pit in mound	Not analysed	-	Flint knife and flint flake
-	Farm Yard primary burial	Pit cut in subsoil (0.5 x 0.3m)	Not analysed	-	-
-	Ffostyll	Pit cut in subsoil	Not analysed	-	-

-	Ffridd y Garreg Wen burial B	Pit in mound (0.8m)	1, adult ?male [Williams 1921]	-	Flint piece
-	Ffridd y Garreg Wen burial C	Scattered among cairn stones	1, adult male [Williams 1921]	-	-
-	Ffridd y Garreg Wen burial G (primary burial)	Pit cut in bedrock covered by stone	1, adult male [Williams 1921]	-	Stone pendant, 10 flints (knives, scrapers and flakes)
-	Foel primary burial	Cist in ground NNE-SSW (*c.* 1.8 x 0.3m)	1, non-adult [Wheeler 1923]	-	Flint scraper, leaf-shaped arrowhead and knife
-	Foel secondary burial	On ground surface	1, adult female [Wheeler 1923]	-	Flint flake (burnt)
-	Four Crosses 1	In eroded mound material (disturbed)	1, young adult [Warrilow *et al* 1986]	-	-
-	Four Crosses 5 cremation burial	Pit cut in ditch fill (0.5 x 0.3m)	1, child [Warrilow *et al* 1986]	2025-1665 cal BC (3510±70 BP, CAR-669)	-
179	Friars Point 3	On ground surface	1, older adult ?female	-	Flint knife (burnt)
180	Ffridd Eithinog	Cist (1.3 x 0.8m)	1, adult	-	-
-	Great Carn 1 pit 16	Pit cut in subsoil (0.4 x 0.3m)	Too small for identification [Ward 1988]	1895-1531 cal BC (3415±70 BP, Birm-1150)	-
181	Jacket's Well secondary burial	Pit in mound (0.8 x 0.4m)	1, young/middle adult ?male	-	-
-	Llandaniel Fab	Cist on ground surface (0.8m square)	1, adult male [Keith 1931]	-	-
182	Llandygai A13	Shallow pit cut in subsoil	2, infant and middle adult ?female	1974-1700 cal BC (3525±45 BP, GrA-22794)	-
183	Llandygai B23	Pit cut in subsoil N-S (2.7 x 1.9m) with stone setting [wooden shuttering]	3, infant, adult and older adult ??female	2568-1758 cal BC (3740±145 BP, NPL-222)	-
184	Llandygai B120	Pit cut in subsoil	2, young child and adult	2275-1945 cal BC (3700±50 BP, GrA-22966)	-
185	Llandygai F cremation deposit	Pit cut in subsoil E-W (0.6 x 0.3m)	3, young child, young adult ?male and adult ??female	-	-
-	Llanilar burial No. 3	Pit cut in subsoil (0.5m) with basal stone (disturbed)	1, adult [Benson *et al* 1982]	-	-
-	Llanilar burial No. 4	Cist in subsoil	1, young/middle adult female [Benson *et al* 1982]	-	-
-	Llanilar burial No. 5	Pit cut in subsoil (0.5m) covered by stones	1, adult female [Benson *et al* 1982]	-	-
186	Llanymynech pit 1097	Pit cut in subsoil (0.3m)	1, adult	-	2 plano-convex stone knives (burnt)
187	Llanymynech cist 1110	Double-cist (cist 1139) in subsoil NE-SW (1.5 x 0.5m)	2, older child and older adult	1879-1637 cal BC (3430±40 BP, Beta-239523)	-

188	Llanymynech cist 1136		2, adult and older adult	-	-
189	Llanymynech cist 1134	Cist in subsoil NW-SE (1.0 x 0.2m)	1, older child	-	-
190	Llecheiddor	Cist on ground surface	1	-	-
191	Llong find No. A-JC (cremation 2)	Pit in mound (disturbed)	1, adult	-	-
192	Llong find No. C-JC (?cremation 1)	Pit in mound (disturbed)	1, adult	-	-
193	Llong find No. D-JC	?inner cairn	1, infant/young child	-	-
194	Llong find No. E-JC	?inner cairn	1, adult	-	-
195	Llong find No. G-JC	?	1, young child	-	-
196	Llong find No. H-JC	?	1, young adult	-	-
-	Marlborough Grange CII	Pit in mound (0.8m) covered by 2 stone slabs	1, adult [Savory 1969]	-	-
-	Moel Goedog I F1	Pit cut in subsoil covered by 3 layers of thin stone slabs	1, young adult [O'Connor 1984]	2141-1754 cal BC (3600±70 BP, CAR-163)	-
-	Moel Goedog I F9	Pit cut in subsoil partially covered by a sloping stone	1, young adult [O'Connor 1984]	-	-
197	Pant-y-Butler barrow 1 burial 1	Pit in mound	2, young child and young adult female	-	-
198	Pant-y-Butler barrow 2 burial 4	In fill of burial 3 grave pit (disturbed?)	1, adult	-	-
-	Pantymenyn	Hearth	Too small for identification [Kirk and Williams 2000]	2118-1690 cal BC (3540±70 BP, CAR-1462); 1916-1622 cal BC (3450±60 BP, CAR-1492)	-
-	Parc y Twmp	Pit cut in subsoil	Not analysed	-	-
-	Pen y Bont central pit	Pit cut in subsoil (0.3m)	Not analysed	-	-
-	Pen y Fan	Cist on ground surface NE-SW (1.1 x 0.7m) (disturbed)	1 cremated bone fragment [Gibson 1997]	-	?copper-alloy object
-	Pen y Gaer Hillfort (N)	On ground surface	Not analysed	-	Copper fragment
-	Pen y Gaer Hillfort (S)	On ground surface	Not analysed	-	Bronze fragments
-	Pen-y-Glogau A	Pit cut in subsoil (0.3-0.5m)	Not analysed	-	-
-	Pen-y-Glogau B	Pit cut in subsoil (0.3-0.5m)	Not analysed	-	-
-	Pen-y-Glogau C	Pit cut in subsoil (0.3-0.5m)	Not analysed	-	-
-	Pen-y-Glogau D	Stone-lined pit cut in subsoil (0.3-0.5m)	Not analysed	-	-
-	Pen-y-Glogau E	Pit cut in subsoil (0.4m)	Not analysed	-	-
	Pen-y-Glogau F	Pit cut in subsoil (0.5m)	Not analysed	-	-
-	Pen-y-Glogau G	Hollow in bedrock	Not analysed	-	-

-	Pen-y-Glogau H	Stone-lined pit cut in subsoil (0.3m) covered by stone slab	Not analysed	-	-
-	Pen-y-Glogau K	?pit	Not analysed	-	-
-	Pen-y-Glogau L	Pit cut in subsoil (0.4m)	No demographic data [Jones and Davies 1930]	-	-
-	Pen-y-Glogau M	Stone-lined pit cut in subsoil (0.3m)	Not analysed	-	-
-	Pen-y-Glogau N	Stone-lined pit cut in subsoil (0.9 x 0.5m)	No demographic data [Jones and Davies 1930]	-	-
-	Pen-y-Glogau O	?pit	Not analysed	-	-
	Pen-y-Glogau P	?cist	Not analysed	-	-
199	Penmaenmawr 278 cremation L	Pit cut in subsoil	1, adult	-	-
-	Pentre Farm C1	Under W end of penannular stone setting	1, child [Jones 1978]	-	-
-	Pentre Farm C2	Pit cut in earth platform (0.7 x 0.3m)	1, child [Jones 1978]	1964-1620 cal BC (3470±70 BP, HAR-958)	-
-	Pentre Farm C3	Pit cut in earth platform (0.6 x 0.4m)	1, child [Jones 1978]	-	-
200	Pillar of Eliseg cist 1	Cist on ground surface (0.4 0.3m) (disturbed)	1, adult	2196-1955 cal BC (3683±38 BP, UBA-27870); 2036-1886 cal BC (3605±31 BP, UBA-28200)	-
201	Pillar of Eliseg cist 2	Cist in secondary cairn (0.5 x 0.3m)	1	-	-
202	Pillar of Eliseg cist 3	Cist in secondary cairn (0.4 x 0.3m)	6, 2 young children, adolescent, young adult, middle/older adult ??male and older adult ?female	2123-1921 cal BC (3633±25 BP, UBA-27868); 2021-1781 cal BC (3569±29 BP, UBA-27869)	Bone pin (burnt), flint knife
-	Pleasant View primary burial	Pit cut in subsoil (0.8m)	Not analysed	-	-
-	Pond Cairn central pit	Pit cut in bedrock (1.2 x 1.2m)	1, non-adult [Cowley 1938]	-	Flint flake
-	Pond Cairn central basin	Shallow pit cut in subsoil	1 [Cowley 1938]	-	-
203	Sant y Nyll	Pit cut in subsoil (0.4m)	2, young child and young adult	-	-
204	Sarn-y-bryn-caled 1 cremation 1	Pit cut in subsoil (1.7 x 1.2m)	2, adult and adult ?female	2116-1881 cal BC (3600±35 BP, SUERC-27586); 2113-1831 cal BC (3595±35 BP, SUERC-27587)	4 barbed and tanged flint arrowheads (burnt), 2 flint flakes (burnt)
-	Sheeplays 279' cremation I	On ground surface	2, non-adult and adult [Cowley 1941]	-	-

-	Sheeplays 279’ cremation II	On ground surface	1, non-adult [Cowley 1941]	-	-
-	Sheeplays 293’ cremation B	Pit in turf-stack	1, adult ?female [Cowley 1941]	-	-
-	Sheeplays 293’ cremation C	Pit in turf-stack	1, adult [Cowley 1941]	-	-
-	Sheeplays 293’ cremation D	Pit in enlarged mound	1, non-adult [Cowley 1941]	-	-
205	Simondston B2	Pit cut in bedrock with 2 upright orthostats	3, foetus/ neonate, young adult and middle/older adult ??female	-	Bronze pin
-	Simondston B3	Pit in subsoil	1 [Cowley 1938]	-	-
206	Simondston B4	Pit in subsoil	2, young child and older adult male	-	Plano-convex flint point
207	Simondston B5	Pit in subsoil	1, middle adult male	-	-
208	Simondston B6	Pit in subsoil	1, adult	-	-
209	Simondston B7	Pit in subsoil	1, adult	-	-
-	Steynton pit 268140	Pit cut in subsoil	No demographic data [Fotaki and Holst 2014]	-	-
-	Steynton pit 268170	Pit cut in subsoil	1, non-adult [Fotaki and Holst 2014]	-	-
-	Sutton 268’ cremation D	In hollow in satellite cairn	1, non-adult [Cowley 1943]	-	-
-	Sutton 268’ cremation E	In hollow in satellite cairn	1, non-adult [Cowley 1943]	-	-
-	Sutton 268’ cremation F	In hollow in satellite cairn	1, non-adult [Cowley 1943]	-	-
-	Sutton 268’ cremation X	Pit in inner mound	Too small for identification [Cowley 1943]	-	-
-	Tafarn Diflas II	Pit in mound (0.6 x 0.3m)	Not analysed	-	-
-	Tandderwen cremation 1	Pit cut into N side of Beaker grave (inhumation 1) [hollowed-out tree trunk]	5, 2 children, 2 adult males and adult female [Brassil *et al* 1991]	821-206 cal BC (2430±130 BP, CAR-1207) (date too late for context: Brassil *et al* 1991: 54)	Segmented faience bead (fragment)
-	Tandderwen cremation 3	Pit cut in subsoil (disturbed)	1, older adult female [Brassil *et al* 1991]	-	-
-	Tandderwen cremation 4	Pit cut in subsoil E-W (1.6 x 1.2m) covered by stone	1, young adult female [Brassil *et al* 1991]	-	-
-	Tandderwen cremation 6	Pit cut in subsoil ENE-WSW (1.1 x 0.8m)	1, young adult female [Brassil *et al* 1991]	2139-1694 cal BC (3570±80 BP, CAR-1189)	-
-	Tandderwen cremation 7	Pit cut in subsoil NE-SW (1.8 x 1.1m) [wooden container]	1, older adult male [Brassil *et al* 1991]	-	-
-	Tandderwen cremation 8	Pit cut in subsoil NW-SE (1.8 x 1.7) [wood plank]	2 [Brassil *et al* 1991]	1876-1457 cal BC (3350±70 BP, CAR-1277)	-
-	Tomen Pentref	On ground surface covered by small stones	Not analysed	-	Bronze object

-	Tre’r ceiri	In hollow on top of stone slab	1 [McKinley 1995]	-	-
210	Treiorwerth burial 7	Shallow depression in bedrock (disturbed)	1, adult	-	-
211	Treiorwerth burial 8	Pit in mound (disturbed)	1, adult	-	-
212	Trelystan I burial 1	Stone-lined pit in subsoil and bedrock NE-SW (1.5 x 0.5m)	1, adolescent	-	-
213	Trelystan I burial 2	Pit cut in bedrock (0.5m) under S satellite cairn	1, older adult	-	-
214	Trelystan I burial 5	Pit in enlarged mound with basal stone	2, young child and adult	-	-
215	Trelystan II burial 4	In enlarged mound (disturbed)	1, adult	-	-
216	Two Tumps West B1	Pit in mound	1, middle/older adult ??female	-	Flint flake
217	Two Tumps West B2	Pit in mound	1	-	-
218	Two Tumps West B3	Pit in mound	1, adult	-	-
219	Two Tumps West B4	Pit in mound	1, adult	-	-
-	Twr Gwyn Mawr (cremation 1)	Cist N-S (2.7 x 0.6m)	Not analysed	-	2 flint barbed and tanged arrowheads
-	Twr Gwyn Mawr (cremation 2)	On ground surface covered by 3 stones	Not analysed	-	-
-	Twyn y Beddau cist C	Cist in mound	Not analysed	-	-
-	Twyn y Beddau cist D	Cist in mound	Not analysed	-	-
-	Ty'n-y-pwll burial 9	Cist in mound	Not analysed	-	-
220	Welsh St Donats 3 burial 3	Pit cut in subsoil NE-SW (1.3 x 0.4m)	1, older adult male	1499-996 cal BC (3020±100 BP, BM-1679R) (date too late: Ehrenberg *et al* 1981: 822)	Riveted bronze knife
221	Welsh St Donats 3 burial 4	On ground surface S end of stone setting B	1, adult	-	Bovine teeth
-	Ynys Hir central burial	Pit cut in subsoil (0.8m square) covered by stone slab	1 [Dunning 1943]	-	-
-	Yr Allor pit 177	Pit cut in ground surface	1, young adult male [Kirk and Williams 2000]	TAQ 1957-1613 cal BC (3460±70 BP, CAR-1464)	-
222	Ysceifiog CII	Pit in mound	1, adult ??female	-	-
223	Ysceifiog CIII	Pit in mound	1, young child	-	Flint flake
-	Ysgwennant No. 1	Pit in mound	1 [Cowley 1972]		
-	Ysgwennant No. 82	Pit in mound	Too small for identification [Cowley 1972]	-	-
-	Ystrad Hynod (cremation 1)	Cist in subsoil (0.6m square)	1, young adult female [Apsimon 1973]	2137-1447 cal BC (3450±140BP, NPL-243)	Bronze awl

-	Ystrad Hynod (cremation 2)	In cairn material	1, non-adult or young adult female [Apsimon 1973]	915-209 cal BC (2480±145BP, NPL-241) (date too late for context)	-

MIDDLE BRONZE AGE CREMATIONS IN POTTERY VESSELS (*c.* 1700-1200 BC)

ID No.	Deposit	Feature (size) [additional structure]	Pottery type (position)	MNI, age, sex [bone report]	C14 dates (BP, code)	Associated artefacts
224	Capel Eithin C15	Pit cut in subsoil (disturbed)	Bucket Urn (upright)	1	807-430 cal BC (2530±70 BP, CAR-455) (date too late)	-
-	Church Farm	Pit cut in subsoil	? (inverted)	1, adult female [HER GGAT]	1900-1691 cal BC (3480±40 BP, Beta-229070); 1741-1529 cal BC (3350±40 BP, Beta-229071); 1257-1003 cal BC (2920±40 BP, Beta-229072)	-
-	Coity group 1 burial 202	Pit cut in subsoil	Collared Urn (inverted)	1, middle adult ??female [Richmond 2009]	-	-
-	Coity group 1 burial 209	Pit cut in subsoil	Collared Urn (inverted)	1, middle/older adult [Richmond 2009]	1741-1529 cal BC (3350±40 BP, Beta-25792)	-
-	Coity group 1 burial 211	Pit cut in subsoil	Collared Urn	1, adult ?female [Richmond 2009]	-	-
225	Cornell Pen y Bedd (cremation 1)	Pit in mound	Bucket Urn (inverted)	1, young adult	-	-
-	Cornell Pen y Bedd (cremation 2)	Pit in mound	Bucket Urn (inverted)	Not analysed	-	-
226	Crug-coy	?	Barrel Urn	1, young child	-	-
227	Kilpaison Burrows CII	Pit in mound	Middle Collared Urn (upright) inside Late Collared Urn (inverted)	1, older child	1690-1513 cal BC (3325±35 BP, GrA-27622)	-
228	Kilpaison Burrows CIII	Pit in mound	Middle Collared Urn (inverted)	1, adult	-	-
229	Kilpaison Burrows CIV	Pit in mound	Middle Collared Urn (inverted)	1, adult	-	-
230	Kilpaison Burrows CV	Pit in mound	Middle Collared Urn (inverted)	1, adult	1749-1546 cal BC (3370±35 BP, GrA-27619)	-
231	Lan Fawr III	Pit in bedrock	Late Collared Urn (inverted)	1, young child	TAQ 2113-1686 cal BC (3530±70 BP, CAR-1037); 1862-1446 cal BC (3330±70 BP, CAR-1038)	-
232	Six Wells 271'	Cist on ground surface (0.9 x 0.7m)	Trevisker Ware (upright)	1, older adult ?male	1607-1417 cal BC (3215±35 BP, GrA-27617); 1608-1412 cal BC (3210±40 BP, GrA-27623)	-

233	Welsh St Donats 3 burial 6	Pit cut in subsoil	Barrel Urn (upright)	2, young child and adult	-	-

MIDDLE BRONZE AGE ACERAMIC CREMATIONS (*c.* 1700-1200 BC)

ID No.	Deposit	Feature (size)	MNI, age, sex [bone report]	C14 dates (BP, code)	Associated artefacts
-	Aber Camddwr II pit 1	Fill of ?stonehole (0.5m)	No demographic data [Wilkinson 1991]	-	-
-	Aber Camddwr II pit 4	Fill of stonehole (0.7m)	No demographic data [Wilkinson 1991]	1402-1013 cal BC (2980±70 BP, CAR-995)	-
-	Aber Camddwr II pit 16	Fill of pit cut in subsoil (0.6m) under paved area of annexe	No demographic data [Wilkinson 1991]	1658-1301 cal BC (3210±70 BP, CAR-997)	-
-	Aber Camddwr II burnt layer	Burnt layer around pit 16	No demographic data [Wilkinson 1991]	-	-
-	Brenig 6	On ground surface (disturbed)	No demographic data [Keepax and O'Connor 1993]	1512-1051 cal BC (3070±90 BP, HAR-536) (hearth beside cairn)	-
-	Brenig 14	Pit in ground (0.3 x 0.2m)	1, adult [Keepax and O'Connor 1993]	-	Utilised flint (burnt)
-	Bridgend	Base of stonehole	1, adult [Spence 1966]	-	Flint flake
-	Coity group 1 burial 206	Pit cut in subsoil	1, adult [Richmond 2009]	-	-
-	Coity group 2 pit 216	Pit cut in subsoil (0.3m)	Too small for identification [Richmond 2009]	-	-
-	Coity group 2 pit 219	Pit cut in subsoil (0.3m)	Too small for identification [Richmond 2009]	-	-
-	Cornell Pen y Bedd (cremation 3)	Pit in mound	Not analysed	-	-
-	Cornell Pen y Bedd (?cremation 4)	Pit in mound	Not analysed	-	-
234	Kilpaison Burrows CI	Pit cut in subsoil	1, adolescent	1951-1703 cal BC (3520±40 BP, GrA-27618)	-
-	Kilpaison Burrows CVI	Pit in mound	Not analysed	-	-
-	Llanystumdwy pit 327001	Pit cut in subsoil (0.5m)	1, adolescent/adult [McKinley 2013]	1622-1451 cal BC (3262±35 BP, SUERC-44825), 1623-1451 cal BC (3263±35 BP, SUERC-44826)	-
-	Llanystumdwy pit 327002	Pit cut in subsoil (0.2m)		1610-1427 cal BC (3225±35 BP, SUERC-44827)	-
-	Longstone Field pit 3	Upper fill of pit cut in subsoil	1, older adult ?male [Wilkinson 1989]	-	-

-	Longstone Field pit 9	Base of pit cut in subsoil	1, older adult [Wilkinson 1989]	-	-
235	Penmaenmawr 280 cist A	Cist (0.5 x 0.4m)	2, young child and adult	-	-
236	Penmaenmawr 280 cist B	Cist (0.4 x 0.3m)	1, infant	-	-
-	Pennant Melangell Church feature 218	Shallow pit cut in subsoil	Too small for identification [McKinley 1994b]	-	-
-	Pennant Melangell Church feature 222	Shallow pit cut in subsoil	1, older child [McKinley 1994b]	-	-
-	Pennant Melangell Church feature 250	Shallow pit cut in subsoil	1, adult [McKinley 1994b]	-	-
-	Pennant Melangell Church feature 254	Shallow pit cut in subsoil	1, adult [McKinley 1994b]	1606-1221 cal BC (3140±70 BP, CAR-1249)	-
-	Pennant Melangell Church feature 280	Shallow pit cut in subsoil	1, adult [McKinley 1994b]	-	-
-	Pennant Melangell Church feature 281	Shallow pit cut in subsoil	1, middle/older adult [McKinley 1994b]	-	-
-	Pennant Melangell Church feature 282	Shallow pit cut in subsoil	1, infant/child [McKinley 1994b]	-	-
-	Pennant Melangell Church feature 350	Shallow pit cut in subsoil	1, adult [McKinley 1994b]	-	-
-	Pennant Melangell Church feature 351	Shallow pit cut in subsoil	1, older child [McKinley 1994b]	1611-1300 cal BC (3180±60 BP, CAR-1309)	-
-	Pennant Melangell Church feature 352	Shallow pit cut in subsoil	Too small for identification [McKinley 1994b]	-	-
-	Pennant Melangell Church feature 355	Shallow pit cut in subsoil	1, older child [McKinley 1994b]	-	-
-	Plas Gogerddan	Pit cut in subsoil *c.* 5m from standing stone	No demographic data [Murphy 1992]	1390-973 cal BC (2950±70 BP, CAR-993)	-
-	Rhos y Clegyrn	On ground surface	No demographic data [Lewis 1974]	-	-
-	St Athan	Pit	2, child and adult [Wessex Archaeology 2010]	1640-1450 cal BC	-
237	Tir Mostyn B	Pit cut in subsoil (0.3m) covered by stone slab	1, adult	-	-

Appendix G: Pyre technology and cremation ritual data summary tables

Key tables for symbols and abbreviations

* Bone loss due to disturbance or burials not fully excavated

Heat-induced fractures	
L	Longitudinal
ST	Straight transverse
CT	Curved transverse
P	Patina
D	Delamination

Colour grades (after Wahl 2008 Table 9.1)	
I	Yellowish white, ivory-coloured, glassy light grey
II	Brown, dark brown, black
III	Grey
III-IV	Milky light grey, bluish grey
IV	Milky white, mat cretaceous
V	Old white

Skeletal representation	
%skull	Percentage of identified bones from the skull
%axial	Percentage of identified bones from the axial skeleton
%UL	Percentage of identified bones from upper limbs
%LL	Percentage of identified bones from lower limbs
%u/id	Percentage of unidentified bones

MIDDLE NEOLITHIC (*c.* 3600-2900 BC)

Deposit	Weight (g)	Max length (mm)	%>10mm	%5-10mm	%2-5mm	Fractures	Colour grade	%skull	%axial	%UL	%LL	%u/id
Bryn Gwyn	1037.7	44	19.2	34.9	45.9	L, ST, CT	IV	18.3	2.4	8.5	8.0	62.9
Llandygai A252	1079.6	80	39.9	41.0	19.1	L, ST, CT, P, D	IV	6.6	2.5	5.3	6.4	79.1
Lower Luggy	1146.6	77	39.4	48.5	12.1	L, ST, CT, P, D	IV	9.2	5.5	10.8	6.5	68.0
Trelystan II burial 1	929.5* (1305)	59	52.7	28.6	18.8	L, ST, CT, P, D	V	9.4	1.5	1.2	4.6	83.3

LATE NEOLITHIC (*c.* 2900-2400 BC)

Deposit	Weight (g)	Max length (mm)	%>10mm	%5-10mm	%2-5mm	Fractures	Colour grade	%skull	%axial	%UL	%LL	%u/id
SYBC site 2 cremation 1	800.7	71	59.1	27.4	13.5	L, ST, CT, D, P	IV	14.0	4.0	9.8	12.2	60.0
SYBC site 2 cremation 2	89.1	39	10.9	44.7	44.4	L, ST, CT	V	13.4	6.9	10.0	14.1	55.5
SYBC site 2 cremation 3	699.7	55	22.6	54.5	22.8	L, ST, CT, D	V	13.7	3.0	2.8	6.1	74.4
SYBC site 2 cremation 4	4.5*	22	31.1	62.2	6.7	L, ST	V	48.9	-	-	-	51.1

EARLY BRONZE AGE CREMATIONS (*c.* 2200-1700 BC)

Deposit	Weight (g)	Max length (mm)	%>10mm	%5-10mm	%2-5mm	Fractures	Colour grade	%skull	%axial	%UL	%LL	%u/id
Afon Wen SF3	2146.0	129	75.7	18.4	5.8	L, ST, CT, D, P	IV/V	18.2	8.2	9.4	16.3	47.9
Afon Wen SF4	2343.1	110	58.2	25.9	15.8	L, ST, CT, D, P	IV	11.3	5.5	7.2	9.2	66.8
Allt Llwyd	174.4*	51	52.5	30.0	17.5	L, ST, CT	V	-	-	-	-	100
Allt y Garn	78.0*	71	52.6	16.3	31.1	L, ST, CT, D	V	25.3	2.2	9.6	31.6	31.4
Bedd Branwen A	24.1*	29	34.9	36.2	28.9	L, ST	V	12.1	0.9	-	-	87.0
Bedd Branwen B	585.7*	68	41.0	38.7	20.2	L, ST, CT	IV	18.3	1.2	6.7	11.3	62.5
Bedd Branwen C	448.9	49	47.5	33.9	18.5	L, ST, CT	V	10.7	2.6	4.5	7.7	74.6
Bedd Branwen D	429.2	54	42.7	35.9	21.4	L, ST, CT	V	19.2	2.6	6.3	4.1	67.7
Bedd Branwen E	0.7	19	100	-	-	-	V	100	-	-	-	-
Bedd Branwen F	3.9*	32	100	-	-	L, ST	V	-	-	-	-	100
Bedd Branwen H	2390.9	72	40.6	40.5	18.9	L, ST, CT, D, P	V	5.9	1.8	5.9	9.5	76.8
Bedd Branwen J	1.2	16	100	-	-	-	V	100	-	-	-	-
Bedd Branwen L	661.6	61	38.3	38.0	23.7	L, ST, CT, D, P	V	11.0	2.9	4.6	8.6	72.9
Bedd Branwen M	1.1	18	100	-	-	-	V	100	-	-	-	-
Bedd Branwen stonehole	26.8	39	43.6	44.0	12.4	L, ST	V	43.6	-	2.8	5.2	48.4
Bedd Emlyn 1	1.7*	21	94.1	-	5.9	L, ST	V	64.7	-	-	-	35.3
Bedd Emlyn 2	210.5	21	32.7	59.0	8.3	L, ST, CT, P	V	16.5	-	5.2	4.2	74.0
Bedd Emlyn 3	575.2	50	33.7	54.0	12.3	L, ST, CT, P	V	7.2	-	3.9	4.4	84.5
Bedd Emlyn 4	74.4*	31	15.5	66.8	17.7	L, ST, CT	V	3.5	2.0	-	-	94.5
Bedd y Brenin	54.0*	41	75.3	23.4	1.3	L, ST, P	V	22.3	-	6.0	38.6	33.0
Bier Hill	53.8*	52	100	-	-	L, ST, CT, P	V	35.9	24.5	14.9	9.1	15.6
Braich Llwyd 1	178.1*	69	95.5	3.1	1.4	L, ST, CT, D, P	III-IV	47.9	8.6	14.8	10.7	18.0
Braich Llwyd 2	503.4	45	50.6	31.5	17.9	L, ST, CT, D, P	V	16.5	2.2	7.3	9.0	65.1
Breach Farm	1286.0	66	89.3	6.7	3.9	L, ST, CT, D, P	III	39.2	25.1	10.0	13.1	12.6
Brenig 40	768.1*	41	39.8	52.6	7.6	L, ST, CT, D, P	V	15.5	1.5	2.8	4.7	75.6
Brenig 44 F20A	542.9	60	52.4	40.2	40.6	L, ST, CT, D	V	17.0	4.5	10.2	10.4	57.8
Brenig 44 F20B	1588.1	84	49.0	41.3	9.7	L, ST, CT, D, P	IV	17.1	3.1	5.9	6.5	67.4
Brenig 44 F43	1588.8	71	48.6	39.8	11.6	L, ST, CT, D, P	IV	12.1	6.5	4.9	6.4	70.0
Brenig 45	59.6*	22	27.6	38.3	34.0	L, ST	V	-	-	-	-	100
Brenig 51 F6	702.8	54	29.9	38.1	32.0	L, ST, CT, D, P	V	14.5	3.0	7.1	6.6	68.9
Brenig 51 F7	708.5	73	67.0	29.8	3.2	L, ST, CT, D, P	IV	16.1	3.4	19.5	19.6	41.4
Bwlch-y-Groes	2.9*	34	26.9	61.5	11.5	L, ST	V	-	-	-	-	100
Bryn-bugeilyn	119.5*	55	71.5	26.4	2.1	L, ST, CT, D, P	IV	37.0	1.8	7.0	10.0	44.2

Cae Cleddau	24.4*	35	52.7	45.4	1.9	L, ST, CT	V	18.8	-	-	-	81.2
Candleston Cist	212.2*	69	64.6	33.3	2.1	L, ST, CT	V	7.8	0.9	14.8	18.3	58.2
Capel Eithin C1	1355.5	84	59.0	30.4	10.6	L, ST, CT, D, P	IV	18.7	6.0	8.3	17.0	49.9
Capel Eithin C2	18.3*	31	-	-	100	L, ST	V	-	-	-	-	100
Capel Eithin C3	733.6	37	25.2	41.4	33.4	L, ST, CT	V	11.9	0.1	1.6	5.9	80.5
Capel Eithin C4	1377.5	55	38.4	37.0	24.6	L, ST, CT, D, P	V	10.5	3.3	5.3	7.3	73.6
Capel Eithin C5	1541.3	71	60.8	25.3	13.9	L, ST, CT, P	V	10.9	3.8	8.4	12.2	64.7
Capel Eithin C7	619.3	42	32.7	43.2	24.1	L, ST, CT, P	V	15.6	1.9	5.7	6.2	70.6
Capel Eithin C8	498.8	45	32.0	39.5	28.5	L, ST, CT, P	V	6.1	-	5.4	10.9	77.6
Capel Eithin C9	669.7	53	31.9	39.9	28.1	L, ST, CT, P	V	5.3	0.5	7.4	9.8	77.0
Capel Eithin C10	454.7	61	36.2	35.8	28.0	L, ST, CT	V	21.2	0.7	5.3	7.4	65.3
Capel Eithin C11	1226.9	81	59.8	27.3	12.9	L, ST, CT, D, P	V	13.5	4.9	7.7	10.1	63.8
Capel Eithin C12	993.6	64	44.0	37.0	19.1	L, ST, CT, D, P	V	7.3	1.7	5.7	7.6	77.7
Capel Eithin C13	1390.0	69	44.4	34.8	20.9	L, ST, CT, P	IV	10.1	1.7	6.6	11.2	70.3
Capel Eithin C16	1398.7	72	44.7	43.9	11.3	L, ST, CT, D, P	IV	10.7	5.9	2.6	2.1	78.8
Capel Eithin C17	62.7*	24	9.5	55.8	34.8	L, ST	V	9.1	-	-	-	90.9
Carneddau I central cairn	356.5	59	34.6	42.7	22.6	L, ST, CT	V	8.0	1.3	6.0	6.4	78.2
Carneddau I cist 1	88.9	48	17.1	60.3	22.6	L, ST, CT, D	V	7.8	1.4	6.3	-	84.5
Carneddau I cist 2	470.4	60	37.5	28.7	33.7	L, ST, CT, D	V	8.9	2.8	7.2	9.5	71.6
Carneddau I cist 3	2.3	20	-	-	-	-	V	-	-	-	-	100
Carneddau I cist 5	530.4	32	37.7	51.5	10.8	L, ST, CT, D	V	12.1	0.7	5.1	7.9	74.2
Carneddau I pit 20	1.7	12	-	-	-	L, ST	V	-	-	-	-	100
Carneddau I pit 21-23	281.7	66	43.2	38.4	18.4	L, ST, CT, D	V	13.8	6.2	5.9	5.8	68.2
Carneddau I pit 25	0.3	10	-	-	-	-	V	-	-	-	-	100
Carneddau I pit 32	0.9	8	-	-	-	-	V	-	-	-	-	100
Carneddau I pit 36	76.1	35	19.9	40.9	39.2	L, ST, CT	V	17.3	-	-	-	82.7
Carneddau I satellite cairn	804.3	86	62.0	30.0	8.0	L, ST, CT, D, P	V	8.0	2.2	10.9	16.5	62.4

Carneddau II pit 16	127.5	50	20.8	48.7	30.5	L, ST, CT, D	V	1.2	5.2	7.2	13.2	73.2
Carneddau II pit 29	478.3	48	33.1	42.2	24.7	L, ST, CT, D, P	V	19.4	3.3	4.9	7.9	64.5
Carneddau II pit 30	776.1	95	50.2	31.7	18.2	L, ST, CT, D, P	V	13.7	1.7	8.1	11.7	64.7
Cefn Cwmwd F1007	28.3*	46	75.3	22.6	2.1	L, ST, CT	V	19.8	7.4	29.3	18.7	24.7
Cefn Cwmwd F1008	10.0*	21	26.5	40.8	32.7	L, ST	V	18.4	-	-	-	81.6
Cefn Cwmwd F1009	349.9*	38	33.8	41.6	24.5	L, ST, CT	V	13.0	5.3	3.7	3.7	74.3
Cefn Cwmwd F1010	184.5*	66	28.7	35.6	35.7	L, ST, CT	V	11.4	7.0	6.5	1.9	73.1
Cefn Cwmwd F1012	88.5	49	36.7	30.7	32.6	L, ST	V	12.7	6.3	-	-	81.0
Cefn Cwmwd F1013	337.3	53	30.6	45.2	24.2	L, ST, CT	V	14.6	-	3.6	4.3	77.5
Cefn Cwmwd F1014	1242.0	74	56.0	26.2	17.7	L, ST, CT, D, P	V	7.4	2.2	4.0	7.3	79.1
Cefn Cwmwd F1033	324.5*	47	31.2	40.6	28.2	L, ST, CT	V	4.7	12.7	6.6	10.4	65.5
Cefn Cwmwd F1034	367.3*	42	31.1	44.8	24.1	L, ST, CT, P	V	19.3	1.1	3.7	5.3	70.6
Cefn Cwmwd unstratified burial	513.7	50	58.6	37.7	3.7	L, ST, CT, D, P	V	11.5	3.6	9.4	8.2	67.3
Crickhowel	2841.0	80	53.1	28.9	18.0	L, ST, CT, D, P	V	8.8	4.0	5.5	7.6	74.1
Croesmihangel 1	158.5*	60	81.4	3.8	14.9	L, ST	V	66.5	2.7	6.1	5.5	19.2
Croesmihangel 2	1952.5	11	33.3	51.5	15.2	L, ST, CT, D, P	IV	11.5	4.6	6.3	4.0	73.5
Croesmihangel 3	324.9	72	39.3	36.1	24.6	L, ST, CT, P	V	8.6	-	7.8	8.5	75.1
Croesmihangel 4	1291.2*	22	-	-	100	L, ST	III-IV	9.8	-	2.4	-	87.8
Croesmihangel 5	2029.2*	44	39.6	29.1	31.4	L, ST	V	34.1	0.6	0.6	-	64.7
Druid's Circle (primary)	542.6	72	56.9	38.2	4.9	L, ST, CT, D, P	IV	9.0	0.7	6.0	12.4	72.0
Druid's Circle (secondary 1)	343.4	63	50.8	37.6	11.7	L, ST, CT, D, P	V	8.0	2.8	9.1	10.5	69.7
Fan 5	631.8	65	47.9	38.2	13.9	L, ST, CT, D, P	V	19.9	1.5	4.4	4.4	69.8
Fan 7	1841.1	86	47.0	44.9	8.1	L, ST, CT, D, P	IV	12.3	4.4	6.4	3.6	73.3
Fan 21	321.0	49	36.4	44.4	19.2	L, ST, CT, P	IV	26.7	1.6	3.6	5.3	62.7

Fan 22	2287.7	46	28.0	44.1	27.9	L, ST, CT, D, P	III/IV	19.4	1.0	3.6	5.4	70.6
Fan 36	1696.4	40	37.9	55.1	7.0	L, ST, CT, D, P	V	22.5	3.1	2.8	2.4	69.2
Fan Foel (primary)	1588.7	86	50.0	40.7	9.3	L, ST, CT, D, P	V	8.6	5.6	4.8	9.9	71.0
Fan Foel (secondary)	258.7	75	33.2	51.6	15.1	L, ST, CT, P	V	6.4	0.3	3.2	6.5	83.6
Friars Point 3	975.9	68	77.2	21.6	1.2	L, ST, CT, D, P	III	15.9	7.1	9.3	13.9	53.8
Friars Point 5	1761.2	118	76.9	16.2	6.9	L, ST, CT, D, P	III	7.0	9.1	8.2	14.9	60.7
Fridd Eithinog	6.7*	41	65.7	29.9	4.5	L, ST, P	V	7.5	6.0	-	13.4	73.1
Gledlom Farm, Ysceifiog Y101	828.1	64	43.0	26.7	30.3	L, ST, CT, P	V	14.7	4.7	5.0	6.8	68.7
Gledlom Farm, Ysceifiog Y131	4648.7*	87	38.9	28.6	32.5	L, ST, CT, D, P	V	4.2	8.8	4.2	5.4	77.5
Gledlom Farm, Ysceifiog Y135	1675.1	90	74.5	21.9	3.6	L, ST, CT, D, P	V/IV	12.1	6.9	7.3	17.8	55.9
Groeswen	29.3	29	58.6	36.7	4.8	L, ST	V	41.4	-	-	-	58.6
Holt	733.9*	79	94.9	4.9	0.2	L, ST, CT, D, P	V	25.1	5.2	18.1	18.4	33.2
Jacket’s Well (primary)	1592.8	99	74.0	22.8	3.2	L, ST, CT, D, P	III	13.1	9.2	11.0	14.0	52.8
Jacket’s Well (secondary)	1160.8	105	85.8	13.4	0.8	L, ST, CT, D, P	V	19.3	9.0	10.7	14.5	46.6
Kerry Hill B1	862.0	74	50.5	42.3	7.3	L, ST, CT, D, P	IV	11.0	3.6	6.8	6.1	72.6
Kerry Hill B2	3.7*	11	-	-	-	L, ST	V	-	-	-	-	100
Kerry Hill B3	163.8	49	51.5	39.3	9.2	L, ST, CT, D, P	V	14.6	-	5.5	-	80.0
Kerry Hill B4	270.1	54	59.6	35.7	4.7	L, ST, CT, D, P	V	9.5	2.3	3.5	9.5	75.2
Llanboidy	178.5*	62	72.7	19.6	7.7	L, ST, CT, P	IV	18.2	9.1	17.5	22.9	32.4
Llandygai A13	416.9	71	54.2	41.6	4.2	L, ST	V	15.8	1.9	7.5	12.6	62.2
Llandygai B23	1909.2	91	43.9	37.3	18.8	L, ST, CT, D, P	V	8.2	7.6	4.4	5.2	74.6
Llandygai B120	838.8	62	40.7	42.0	17.3	L, ST, CT, D, P	V	7.1	0.7	5.8	7.8	78.5
Llandygai C71	1664.1	95	63.2	25.2	11.6	L, ST, CT, D, P	V	12.5	7.4	7.5	18.1	54.4
Llanfihangel	1411.3	80	57.4	36.1	6.5	L, ST, CT, D, P	IV	12.4	7.2	5.5	6.2	68.6
Llanmaes (ring ditch)	1801.7*	68	26.0	40.8	33.2	L, ST, CT, D, P	III-IV	9.4	2.2	3.5	5.5	79.3
Llanmaes (pit burial)	415.2	86	83.6	15.5	1.0	L, ST, CT, D, P	V	23.0	16.2	7.0	26.8	27.1
Llanymynech 1097	635.1	40	39.0	53.8	7.2	L, ST, CT, P	V	12.6	0.9	2.7	2.3	81.6

Llanymynech 1110	973.9	57	65.7	29.1	5.2	L, ST, CT, D, P	IV	9.1	3.7	12.4	14.9	60.0
Llanymynech 1136	2154.0	74	54.5	36.4	9.1	L, ST, CT, D, P	III/V	12.7	1.9	7.9	10.2	67.3
Llanymynech 1134	847.5	75	60.4	34.3	5.3	L, ST, CT, D, P	IV	8.2	1.4	4.2	5.7	80.5
Llanymynech 1135	1714.0	51	41.7	48.2	10.1	L, ST, CT, D, P	III/IV	10.2	1.7	7.9	8.4	71.8
Llecheiddor	25.1*	41	100	-	-	L, ST, P	V	47.2	-	-	-	52.8
Llong A	10.4*	19	-	85.1	14.9	L, ST	IV	16.1	-	-	-	83.9
Llong C	61.2*	51	53.0	44.4	2.3	L, ST, CT	IV	23.5	9.1	5.8	6.7	54.9
Llong D	25.7	33	11.8	48.2	40.0	L, ST, CT	III-IV	27.8	8.6	-	-	63.5
Llong E	4.6	21	95.7	4.3	-	L, ST	V	13.0	-	-	-	87.0
Llong G	31.4	32	35.1	37.8	27.1	L, ST	V	15.5	-	6.5	22.7	55.3
Llong H	20.8	33	36.1	54.5	9.4	L, ST, CT	IV	42.4	-	50.3	4.7	2.6
Maes y Barker	1.9*	32	94.7	5.3	-	L, ST	V	-	-	-	-	100
Maesymynan	592.0	97	68.4	29.7	1.8	L, ST, CT, D, P	IV/V	17.3	5.9	3.1	13.3	60.4
Marian Bach	64.6*	47	80.9	16.7	2.4	L, ST, P	IV	65.7	10.3	3.2	1.9	18.8
Marlborough Grange CI	1679.0*	53	52.5	40.3	7.3	L, ST, CT	V/III	11.1	3.9	5.8	7.6	71.6
Marlborough Grange CIII	93.9*	36	29.8	53.0	17.2	L, ST	V	13.2	-	-	4.7	82.2
Moel Fammau	967.9	75	47.1	33.1	19.8	L, ST, CT, D, P	IV	8.6	1.8	3.9	5.0	80.7
Moel Ferna	12.1*	40	100	-	-	P	V	52.9	47.1	-	-	-
Newton	552.9	57	54.5	38.2	7.3	L, ST, CT, D, P	V	21.0	3.3	8.3	8.7	58.7
Pant-y-Butler 1 burial 1	1609.0	105	55.9	37.1	7.0	L, ST, CT, D, P	IV	10.9	7.2	5.0	8.4	68.5
Pant-y-Butler 1 burial 2	651.3*	51	46.5	47.4	6.0	L, ST, CT, D, P	V	13.6	2.0	4.8	6.8	72.8
Pant-y-Butler 2 burial 4	22.9*	24	18.7	62.1	19.2	L, ST, CT	V	11.4	1.4	-	-	87.2
Pant-y-Dulath (primary)	68.7*	68	95.2	3.5	1.3	L, ST, CT	III-IV	49.9	9.9	12.7	22.2	5.3
Pant-y-Dulath (secondary)	825.0*	89	73.1	20.7	6.2	L, ST, CT, D, P	IV	14.8	13.8	11.3	15.8	44.3
Pendre II	1120.5	99	93.6	5.5	1.0	L, ST, CT, D, P	V	17.5	14.3	19.1	19.2	29.9
Penllwyn	1097.8	75	87.8	10.8	1.4	L, ST, CT, D, P	III-IV	24.1	8.4	18.6	11.3	37.7
Penmaenmawr 278 Cremation L	162.6	35	27.0	64.5	8.5	L, ST, CT	V	23.7	-	7.5	8.0	60.8

Pillar of Eliseg cist 1	20.4*	25	26.6	49.3	24.1	L, ST	V	45.8	4.9	-	-	49.3
Pillar of Eliseg cist 2	8956.4	148	45.2	32.5	22.2	L, ST, CT, D, P	V	8.4	4.6	5.3	8.3	73.3
Pillar of Eliseg cist 3	3.0	17	-	34.5	65.5	L, ST	V	-	-	-	-	100
Pont Glan Rhydw	169.3*	65	100	-	-	L, ST, CT, D, P	V	19.7	24.2	21.9	23.8	10.4
Rhiw	334.9	107	83.3	15.7	1.0	L, ST, CT, D, P	III	20.1	7.5	9.7	16.7	46.0
Sant y Nyll	739.9	66	45.7	46.0	8.3	L, ST, CT, D, P	III	19.1	8.4	7.0	11.1	54.5
Sarn-y-bryn-caled cremation 1	1564.7	69	47.2	38.6	14.2	L, ST, CT, D	V	8.0	10.2	6.5	7.4	67.8
Sarn-y-bryn-caled cremation 2	1128.2	125	64.0	27.5	8.6	L, ST, CT, D, P	V	16.1	4.9	7.9	10.4	60.6
Simondston A1	1110.7	77	72.4	24.4	3.2	L, ST, CT, D, P	V/IV	11.3	8.2	9.2	18.8	52.6
Simondston A2	1325.6	85	64.1	24.6	11.3	L, ST, CT, D, P	III-IV	9.4	7.7	7.4	15.6	59.9
Simondston B1	412.4*	61	71.8	23.3	4.9	L, ST, CT, D, P	V/IV	15.2	9.6	6.2	18.1	50.9
Simondston B2	2243.8	87	74.4	20.9	4.7	L, ST, CT, D, P	III-IV	19.8	3.1	7.1	10.2	59.8
Simondston B4	1404.3	68	62.4	32.7	4.9	L, ST, CT, D, P	IV	18.1	4.1	7.1	12.4	58.3
Simondston B5	953.6	62	71.4	22.4	6.2	L, ST, CT, D, P	IV	14.3	3.5	7.5	12.9	61.8
Simondston B6	106.8*	37	62.1	31.2	6.8	L, ST	IV	14.1	2.9	0.6	2.4	80.0
Simondston B7	47.9*	32	53.0	43.2	3.8	L, ST	IV	27.5	-	5.2	13.8	53.6
Staylittle	279.6	70	96.2	3.1	0.7	L, ST, CT, D, P	V	19.6	12.1	14.5	24.9	28.9
Treiorwerth 1	2009.6	88	42.9	38.3	18.8	L, ST, CT, D, P	IV	12.9	1.0	6.3	10.1	69.7
Treiorwerth 2	2.9*	45	-	-	-	L, ST	V	51.0	-	-	-	49.0
Treiorwerth 4	4.6*	37	-	-	-	L, ST	V	30.0	-	-	-	70.0
Treiorwerth 6	4.7	17	-	-	100	L, ST	V	-	-	-	-	100
Treiorwerth 7	334.6*	47	28.7	50.1	21.2	L, ST, CT	V	16.5	0.7	3.5	3.0	76.3
Treiorwerth 8	309.6*	63	57.5	33.8	8.7	L, ST, CT, P	V	14.2	-	11.5	19.0	55.4
Trelystan I burial 1	1112.7	33	24.6	43.1	32.3	L, ST, CT, D, P	V	3.3	0.4	1.0	2.9	92.3
Trelystan I burial 2	1326.7	101	67.5	14.4	18.1	L, ST, CT, D, P	IV	10.3	5.4	5.9	9.3	69.0
Trelystan I burial 3	20.9*	28	40.3	34.8	24.9	L, ST, CT	V	25.6	-	-	-	74.4
Trelystan I burial 4	4533.5	59	64.7	13.6	21.7	L, ST, CT, D, P	III-IV	8.9	2.4	2.8	7.4	78.5
Trelystan I burial 5	1015.5	45	61.1	31.3	7.6	L, ST, CT, D, P	IV	7.0	2.1	0.8	5.6	84.5

Trelystan I burial 6	71.0*	27	26.6	50.5	22.9	L, ST, CT	V	14.7	2.7	-	-	82.5
Trelystan I burial 7	438.6	69	22.1	50.3	27.6	L, ST, CT, D, P	V	7.4	2.4	2.9	-	87.2
Trelystan II burial 2	1198.4	88	54.4	30.6	15.1	L, ST, CT, D, P	V	6.0	2.8	3.3	7.8	80.2
Trelystan II burial 3	2276.4	70	54.9	37.7	7.3	L, ST, CT	IV	5.6	2.8	2.5	3.2	85.9
Trelystan II burial 4	176.2*	40	13.4	44.5	42.1	L, ST, CT	V	8.2	-	2.7	0.5	88.6
Tywyn	257.4*	67	61.4	33.1	5.5	L, ST, CT, D, P	III-IV	20.9	7.9	6.3	14.8	50.1
Welsh St Donats 1	1979.1	121	66.5	25.5	8.1	L, ST, CT, D, P	IV	12.0	12.0	9.2	13.1	53.7
Welsh St Donats 2	0.9*	10	44.4	-	55.6	L, ST	IV	4.7	-	-	-	95.3
Welsh St Donats 3 burial 3	2611.2	137	79.6	16.9	3.5	L, ST, CT, D, P	III-IV	11.0	13.4	10.3	18.1	47.2
Welsh St Donats 3 burial 4	535.9	56	28.6	51.6	19.9	L, ST, CT	V	5.1	1.4	5.7	6.2	81.6
Welsh St Donats 3 burial 5	462.0*	62	40.6	40.5	18.8	L, ST, CT, D, P	IV	9.1	0.7	5.4	10.7	74.1
West Williamston	475.5	72	37.8	51.7	10.6	L, ST, CT, D, P	V	6.8	0.8	7.0	13.0	72.4
Ysgwennant 19	602.5	68	55.4	37.1	7.4	L, ST, CT	V	6.8	1.9	6.2	11.5	73.5
Ysgwennant 70	63.1	65	62.5	30.1	7.3	L, ST, CT, P	V	16.4	14.5	3.8	11.8	53.4
Ystradfellte	160.1	84	90.0	10.0	-	L, ST, CT, D, P	V	26.2	2.6	16.0	34.1	21.0
Holywell Racecourse CI	2362.2	97	63.4	25.9	10.7	L, ST, CT, D, P	IV	15.3	9.6	6.3	10.1	58.7
Holywell Racecourse CII	707.2	53	31.7	40.7	27.6	L, ST, CT	IV	20.7	0.4	1.5	3.1	74.3
Holywell Racecourse CIII	119.2	45	56.0	36.1	7.9	L, ST, CT, P	V	10.7	2.2	7.5	20.5	59.1

MIDDLE BRONZE AGE CREMATIONS (*c.* 1700-1200 BC)

Deposit	Weight (g)	Max length (mm)	%>10mm	%5-10mm	%2-5mm	Fractures	Colour Grade	%skull	%axial	%UL	%LL	%u/id
Capel Eithin C15	32.8*	45	38.4	44.5	17.1	L, ST	V	-	-	-	-	100
Cornell Pen-y-bedd	222.1*	68	87.9	10.6	1.5	L, ST, CT, D, P	IV	18.5	16.5	13.5	17.9	33.5
Crug-coy	325.3	34	16.6	22.4	61.0	L, ST, CT	IV	16.2	0.7	1.6	6.6	74.8
Kilpaison Burrows CI	505.6	74	87.8	11.0	1.2	L, ST, CT, D, P	IV	22.6	11.6	17.5	19.6	28.8
Kilpaison Burrows CII	439.5	73	83.4	14.7	1.9	L, ST, CT, D, P	III-IV	30.8	10.0	8.1	25.5	25.6
Kilpaison Burrows CIII	354.7	49	78.8	15.8	5.4	L, ST, CT, P	IV	15.4	-	13.0	17.0	54.6
Kilpaison Burrows CIV	63.7	32	40.7	58.4	0.9	L, ST, CT, P	III-IV	21.6	-	5.8	9.9	62.6
Kilpaison Burrows CV	146.2	70	86.2	13.2	0.6	L, ST, CT, P	V	12.4	5.1	22.8	29.9	29.7
Lan Fawr III	53.7	39	23.9	47.2	28.9	L, ST, CT, P	V	14.2	1.9	9.8	15.4	58.7
Penmaenmawr 280 cist A	413.2	41	21.1	54.4	24.5	L, ST, CT, P	V	10.7	0.6	4.7	6.2	77.8
Penmaenmawr 280 cist B	57.6	32	9.4	65.8	24.8	L, ST, CT	IV	7.8	-	-	-	92.2
Six Wells 271'	1262.7	70	63.9	25.5	10.6	L, ST, CT, D, P	III-IV	9.6	5.8	9.5	18.6	56.6
Tir Mostyn B	310.5	59	42.7	41.8	15.5	L, ST, CT, P	IV	19.0	0.7	7.8	16.2	56.4
Welsh St Donats 3 burial 6	755.4	83	40.8	37.1	22.2	L, ST, CT, D, P	IV	6.2	0.4	10.1	11.6	71.6

LLANDYGAI A PIT CIRCLE (GWYNEDD) CREMATIONS

Deposit	Weight	Max length (mm)	%>10mm	%5-10mm	%2-5mm	Fractures	Colour Grade	%skull	%axial	%UL	%LL	%u/id
Llandygai A111	1553.3g	48	29.2	42.7	28.1	L, ST, CT, P, D	IV	14.8	1.6	1.3	1.2	81.1
Llandygai A81	10.8g	22	-	-	-	L, ST	V	-	-	-	-	-
Llandygai A101	23.9g	23	-	-	-	L, ST	IV	-	-	-	-	-
Llandygai A110	78.9g	22	5.8	40.3	53.9	L, ST	V	-	-	-	-	-
Llandygai A119	0.1g	5	-	-	-	L, ST	V	-	-	-	-	-
Llandygai A123	3.4g	17	-	-	-	L, ST	V	-	-	-	-	-
Llandygai A76	0.4g	16	-	-	-	L, ST	V	-	-	-	-	-
Llandygai A82	1.9g	19	-	-	-	L, ST	V	-	-	-	-	-
Llandygai A83	2.1g	18	-	-	-	L, ST	V	-	-	-	-	-
Llandygai A94	15.4g	19	-	-	-	L, ST	V	-	-	-	-	-
Llandygai A95	6.0g	13	-	-	-	L, ST	V	-	-	-	-	-
Llandygai A98	20.2g	36	-	-	-	L, ST	IV	-	-	-	-	-
Llandygai A114	2.4g	18	-	-	-	L, ST	IV	-	-	-	-	-
Llandygai A116	1.1g	18	-	-	-	L, ST	IV	-	-	-	-	-
Llandygai A132	1.4g	15	-	-	-	L, ST	V	-	-	-	-	-
Llandygai A68	17.1g	24	-	-	-	L, ST	V	-	-	-	-	-
Llandygai A69	1.6g	32	-	-	-	L, ST	V	-	-	-	-	-
Llandygai A96	9.9g	21	-	-	-	L, ST	IV	-	-	-	-	-
Llandygai A166	347.4g	30	20.7	42.6	33.6	L, ST, CT	IV	17.5	-	1.2	1.7	79.6
Llandygai A171	12.0g	11	-	-	-	L, ST	IV	-	-	-	-	-